

## VPDES PERMIT PROGRAM FACT SHEET

This document gives pertinent information concerning the VPDES permit listed below  
This permit is being processed as a minor industrial permit The effluent limitations contained in this permit will maintain the Water Quality Standards of §9 VAC 25-260-00 et seq The process consists of establishing effluent limits for pH, biochemical oxygen demand, total suspended solids, fecal coliform, and total residual chlorine

- |   |                             |                                   |
|---|-----------------------------|-----------------------------------|
| 1 | Facility Name and Address   | SIC Codes                         |
|   | Gunnoe Sausage Company, Inc | 2011, Meat Packing Plants         |
|   | 3989 Cifax Road             | 2013, Sausages and Other Prepared |
|   | Goode, VA 24556             | Meats                             |

Location 3989 Cifax Road, State Route 643, Goode

- |   |           |           |                                 |                   |
|---|-----------|-----------|---------------------------------|-------------------|
| 2 | Permit No | VA0001449 | Existing Permit Expiration Date | November 22, 2009 |
|---|-----------|-----------|---------------------------------|-------------------|

- |   |               |              |                    |
|---|---------------|--------------|--------------------|
| 3 | Owner Contact | Name         | Craig Gunnoe       |
|   |               | Title        | Executive Director |
|   |               | Telephone No | (540) 586-1091     |

- |   |                             |                            |                  |                  |                   |
|---|-----------------------------|----------------------------|------------------|------------------|-------------------|
| 4 | Application Complete Date   | October 9, 2009            |                  |                  |                   |
|   | Permit Drafted By           | Lewis Pillis               | Date             | October 13, 2009 |                   |
|   | DEQ Regional Office         | Blue Ridge Regional Office |                  |                  |                   |
|   | Reviewed By                 | Kip Foster                 | Date             | October 28, 2009 |                   |
|   | Public Comment Period Dates | From                       | October 21, 2009 | To               | November 21, 2009 |

- |   |                       |               |            |               |         |    |       |     |
|---|-----------------------|---------------|------------|---------------|---------|----|-------|-----|
| 5 | Receiving Stream Name | Roaring Run   | River Mile | 3 26          |         |    |       |     |
|   | Basin                 | Roanoke River | Subbasin   | Roanoke River | Section | 5a | Class | III |
|   | Special Standards     | PWS           |            |               |         |    |       |     |

7-Day, 10-Year Low Flow	0 018 MGD	1-Day, 10-Year Low Flow	0 015 MGD
30-Day, 5-Year Low Flow	0 045 MGD	Harmonic Mean Flow	0 14 MGD
30-Day, 10-Year Low Flow	0 028 MGD		

Tidal? No

On 303(d) list? Yes

6 **Operator License Requirements** III

7 **Reliability Class** N/A

8 **Permit Characterization**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Private | <input type="checkbox"/> Possible Interstate Effect       |
| <input type="checkbox"/> Federal            | <input type="checkbox"/> Interim Limits in Other Document |
| <input type="checkbox"/> State              |   |
| <input type="checkbox"/> POTW               |   |

9 **Facility Description**

NUMBER AND DESCRIPTION OF OUTFALLS

Outfall	Source of Discharge (List operations contributing flow)	Treatment Description Unit by Unit	Flow, MGD*	
			Average	Max 30 day average
001	Kill Room Deboning Room Link Room Holding Pen Washdown	Skim Tank Chemical Addition Hydrofloat Aerated Lagoon Final Clarifier Chlorine Disinfection Dechlorination Step Aerator Aerated Sludge Holding Sludge hauled to Lynchburg POTW	0 014	0 026

\*Effluent flows from DMRs Flows reported on the permit application were long term ave = 0 0055 with a maximum of 0 007 MGD Annual average flow in 2007 was 0 011 MGD and in 2008 was 0 018 MGD

This facility is both a slaughterhouse and processor Live hogs are kept in an outside holding pen that has a roof and concrete floor About 10,000 pounds of animals are slaughtered in an average day and about 50,000 pounds of sausage is produced in an average week The facility currently operates one eight-hour shift, five days per week This amounts to 2,600,000 pounds a year, based on a 52 week year

The holding pen is washed down once per day and the washdown water is routed to the head of the wastewater treatment system Other wastewaters generated at the facility are from the hog killing, deboning and sausage production An alkaline degreaser and an alkaline soap

are used in the production area. Animal parts and blood are collected for rendering. However, some blood and chunks of fat are present in the raw wastewater. Rendering wastes are loaded onto trucks within an enclosed area of the facility. Valley Protein picks up the renderings from this facility and transports them off-site.

Preliminary treatment for the removal of large floatable material is provided by the skim tank. The skim tank is located inside the treatment building within a curbed doorway and a grated floor sump. This tank is manually skimmed daily, pumped to the dissolved air flotation (DAF) unit. Tank skimmings are stored within the building until removal by the rendering company.

The DAF unit went into full operation June 9, 2009, replacing a hydrofloat unit. Chemicals are added to the effluent prior to entering the DAF. Ferric sulfate is added to lyse blood cells, NaOH to raise the pH and a polymer to aid in flocculation. Fat removed from the DAF is containerized until it is hauled off-site by the rendering company.

Effluent from the DAF is discharged to a lagoon. Using two mixers in the lagoon, the MLSS concentration of 4,500 mg/L is targeted. Polymer is added to a conditioning tank prior to the final clarifier. In the future, polymer may be used in the DAF as well. Sludge from the clarifier is pumped to the aerated sludge holding tank, where it is stored until picked up by a rendering company.

#### Current polymer

Ashland CEKA 4645 – an ethoxylated alcohol (with a 12-18 carbon chain) with low toxicity to *Daphnia magna*, >10 mg/L

#### Proposed polymer

Chemical Solutions, Inc., FS-1510A - Copolymer of an acrylate salt and acrylamide. The MSDS for this product stated that ecological information was not determined. Composition was listed as follows:

	CAS No	wt %
Urea	57-13-6	4-6
2-propenoic acid, sodium salt, polymer with 2-propenamide	25085-02-3	88-92

Effluent from the clarifier flows into the chlorination/dechlorination tank. This unit was installed and operational in late July 1997, and increased the contact time of the effluent with chlorine by nearly 60%. Chlorination and dechlorination are achieved by using tablets. Wastewater then flows over cascade steps to Roaring Run. A copy of the wastewater treatment flow schematic is found in Appendix A.

There are no boilers at the facility; hot water is provided by gas water heaters.

Storm water may be contaminated in a couple of areas at the facility. Storm water from the

front or west loading docks flows to an outfall near the WWTP, whereas loading docks to the N side of the building enter the creek upstream of the WWTP. Even though there was a trench drain on the loading dock to route floor wash water to the WWTP, overspray from floor wash water was entering the front yard drains. A puddle of white liquid was observed on the ground in the loading area during the site visit.

The truck maintenance shop is surrounded by gravel, but there would be runoff from a large storm. Truck trailers are sometimes washed in the gravel area. Truck fueling is not performed on-site.

10 **Sewage Sludge Use or Disposal** Sanitary wastewater is treated in an on-site drainfield.

11 **Discharge(s) Location Description**

Name of Topo Sedalia, VA (a copy is in Appendix A)  
Topo Number 107B  
Outfall Location Latitude 37° 24' 31" Longitude 79° 24' 10"

12 **Material Storage**

Waste oil – 275 gal tank with a short berm, beside the truck maintenance building  
Soda ash, caustic, polymer – stored inside the WWTP building

13 **Ambient Water Quality Information**

Roaring Run drainage area upstream of the outfall was determined by GIS and is considered superior to that previously performed by hand. The updated upstream drainage area is 0.98 sq mi, slightly higher than before. The drainage area of Roaring Run is about 3.45 sq mi.

The closest significant downstream tributary (unnamed) is 0.712 mi downstream, at an approximate elevation of just less than 800 ft. Roaring Run flows for 3.5 miles after Gunnoe before it enters the Big Otter River.

Location	Big Otter river mile
Upstream monitoring station on the Big Otter River, 4ABOR034.32	34.42
Nearest upstream monitoring station on the Big Otter River, 4ABOR033.22, downstream of Rt 644 Bridge	33.22
<b>Roaring Run enters the Big Otter River, just N of Rt 221</b>	<b>30.61</b>

Nearest downstream monitoring station, 4ABOR024 46, where the Otter River crosses Rt 460, below Elk creek confluence	24 46
Monitoring station on the Big Otter River, upstream of Cobbs Creek Mouth	19 84
Monitoring station on the Big Otter River at the Rt 24 Bridge	16 26
Monitoring station on the Big Otter River, Rt 644 Bridge in Bedford County	12 18

DEQ conducted several flow measurements on Roaring Run from 1994 to 1998. These measurements are used to estimate the flow in Roaring Run at critical low flow conditions. The flow frequency memo in Appendix B explains this.

The water quality of Roaring Run has not been assessed. Roaring Run is in the L25R watershed and flows into the Big Otter River, Upper 1 segment, which extends from the mouth of Roaring Run downstream to the confluence of Elk Creek. Roaring Run is not in the Elk Creek drainage area, although some documents refer to the L25R watershed as the "Elk Creek watershed". Recreation is impaired in the Upper 1 segment of the Big Otter River due to high numbers of fecal bacteria. The TMDL accounted for discharges of fecal coliform from Gunnoe in the allocation, equal to the average VPDES permit limit of 200/100 ml.

Dissolved oxygen has been modeled in Roaring Run in previous permit development. The stream slope can be estimated from the topographic map. Using a GIS map, it is about 2260 feet between where Roaring Run crosses the 840 foot contour and the 820 foot contour. This equates to a stream slope of about 0.0885 ft/ft.

#### 14 Antidegradation Review & Comments

Tier            1        2        3  
                  1          X  

The State Water Control Board's *Water Quality Standards* regulations include an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1, existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The facility is located on a segment of Roaring Run that is not included on the 2004 303(d) Impaired Waters Segments list, the stream is a public water supply, and there is no water quality data for the stream, the receiving waters are designated as Tier 2.

Since the quality of Tier 2 waters is better than required by the standards, no significant degradation of the existing quality is allowed. For purposes of aquatic life protection, "significant degradation" means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) for aquatic life protection was calculated for each pollutant in the last permit reissuance as follows:

$$0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The antidegradation baseline for human health protection is calculated for each pollutant as follows:

$$0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The "antidegradation baselines" become the new water quality criteria in Tier 2 waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant.

The discharge is in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

- 15    **Site Visit**      Date: August 10, 2009      Performed by Lewis Pillis  
(See Appendix A for a copy of the site visit memorandum.)

## 16 Effluent Screening & Limitation Development

The following are the maximum pollutant data, that are above the instream WQS, from the discharge in the past 3 years

<u>Pollutant</u>	<u>concentration, mg/L</u>	
pH	7.8 SU	
Ammonia	0.180	
BOD <sub>5</sub>	14	
Nitrate	71.8	
O&G	12	
Total phosphorus	1.9	
Alpha activity	27 pCi/L	
Beta activity	71 pCi/L	screening value=50 pCi/L
Radium 225	0.33 pCi/L	no WQS
Radium 228	6.6 pCi/L	no WQS
Cobalt, total	0.005	
Copper, dissolved	0.003	
Zinc, dissolved	0.030	
Hardness	34	

DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq)

### Final Limitations Table

Date From effective date of permit  
 To expiration date

Outfall 001  
 SIC Code 2011, 2013

Parameter	Basis for Limit	Discharge Limitations				Monitoring Requirements	
		Monthly Average	Max Weekly Average	Min	Max	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	Recorded
pH (Standard Units)	1,2	NA	NA	6 0	9 0	1/D-Day	Grab
BOD <sub>5</sub>	2	NL mg/L 0 55 kg/d	NA	NA	NL mg/L 1 1 kg/d	1/D-Week	8HC
Dissolved Oxygen, mg/L	2	NA	NA	4 0	NA	1/D-Week	Grab
TSS	1	NL mg/L 1 0 kg/d	NA	NA	NL mg/L 2 0 kg/d	1/D-Week	8HC
TRC*	2	11 ug/L	NA	NA	11 ug/L	1/Month	Grab
<i>E coli</i> **	2	126/100 ml	NA	NA	NA	1/Week	Grab
Fecal Coliform	1	NA	NA	NA	400/100 ml	1/Year	Grab
Oil and Grease	1, 3	NL mg/L 0 36 kg/d	NA	NA	10 mg/L 0 73 kg/d	1/Month	Grab

The basis for limitations codes are

- 1 Technology-based limits (40 CFR 432, Meat Products Point Source Category, Subpart C – Low-Processing Packinghouse Subcategory)
- 2 Water Quality Standards
- 3 Best Professional Judgment

NL = No Limitation, monitoring required, NA = Not Applicable

IS = Immersion Stabilization

\* No more than 3 samples for TRC taken after the chlorine contact tank and prior to dechlorination shall be less than 1 5 mg/L No TRC sample collected after the chlorine contact tank and prior to dechlorination shall be less than 0 6 mg/L Note that sampling frequency after the chlorine contact chamber and prior to dechlorination is 1/day

\*\* Geometric Mean, samples collected between 10 am and 4 pm

Federal Effluent Guidelines for Meat Products Point Source, Subpart G – Sausage and Luncheon Meats Processors (40 CFR §432.70 et seq ) apply to this facility. The effluent limits based on these BPT or BAT guidelines are production based. Production has decreased at the facility due to a business decision by the Company and not due to a temporary decrease in sales. A copy of the spreadsheet used in these calculations is included in Appendix C.

Federal Effluent Guideline parameters must be evaluated to ensure protection of the water quality standards. The limitations necessary to protect the water quality standards, and the limitations in the existing permit will be compared and the most stringent limit for each parameter will be incorporated into the permit.

### **Mixing Zone**

The agency mixing zone program, MIX EXE, was used to determine whether a complete mix assumption with the receiving stream flow is appropriate. The program indicated that 100 percent of the 7Q10, 30Q10, and 1Q10 may be used for calculating wasteload allocations (WLAs). A copy of the print out from the MIX EXE run is enclosed in Appendix C.

### **Flow**

As in the previous permit, there is no limit for flow, however flow is to be monitored continuously and recorded. Although Form 2C indicates flow is not intermittent, continuous discharges are usually present only during production operations. Production is higher in the winter months, about three separate times. WWTP discharge will be continuous and last from 1 week to 1 month during each of these times. In the summer, there will be a discharge only for a few days at a time.

### **pH**

In accordance with 9 VAC 25-260-50 *Water Quality Standards* for Class III Nontidal Waters (Coastal and Piedmont Zones), pH limitations of 6.0 S U minimum and 9.0 S U maximum are applied at this outfall. These limitations are equivalent to those in the Federal Effluent Guidelines for Meat and Poultry Products Point Source Category (40 CFR §432.3). The monitoring frequency is once per discharge day since the facility does not discharge every day.

### **BOD<sub>5</sub>**

The monthly average BOD<sub>5</sub> limitation of 0.55 kg/d in the current permit was based on the Water Quality Management Plan (WQMP) for the Upper Roanoke River Basin. This BOD load was not included in the Water Quality Management Planning Regulation, 9VAC25-

720-80 when the WQMP was rewritten as a regulation. The basis in the WQMP was secondary treatment, which was a Best Professional Judgment [BPJ] to apply the Federal Secondary Treatment Regulation, 40 CFR Part 133. The BPJ limits may not be made less stringent to add the less stringent Federal Effluent Guidelines due to antibacksliding, 9 VAC 25-31-220.

The current BOD permit limits of 0.55 kg/d average and 1.1 kg/d maximum will remain in the reissued permit. The maximum limit was previously established using Agency BPJ procedures (1.5 x monthly average). At average flow, the equivalent BOD concentrations would be 10 mg/L ave and 21 mg/l max and at maximum monthly average flow would be 6 mg/L ave and 11 mg/l max. The monitoring frequency will remain once per discharge week and the sample type will also remain an 8-hour composite.

### **Dissolved Oxygen**

Estimated critical flow in the receiving stream has decreased since the dissolved oxygen model was run in 1994. In 1994, the 7Q10 was estimated at 0.042 MGD. Currently, the 7Q10 estimate is 0.018 MGD. Model output indicates that a dissolved oxygen [DO] limit of 4 mg/L is needed to keep DO in the receiving stream above the WQS during initial mixing. Step aeration is present at the WWTP and the discharge should be able to meet this level of oxygenation.

### **TSS**

The Federal Effluent Guideline limitations for TSS are 1.1 kg/d average and 2.2 kg/d maximum. There are no TSS water quality standards. The current permit limits, 1.0 kg/d average load and 2.0 kg/d maximum load must remain due to Federal antibacksliding provisions, since they are more stringent and based on best professional judgment. The current monitoring frequency and sample type will remain the same in the reissued permit.

### **Oil and Grease**

The Federal Effluent Guideline [EG] limitations for oil & grease are 0.36 kg/d average and 0.73 kg/d maximum. There are no oil & grease water quality standards. The current permit limit of 10 mg/L maximum would equate to a load of 0.53 kg/d at average flow and 0.98 kg/d at the maximum 30 day average flow of 0.026 mgd. Depending on the WWTP effluent flow, either the BPJ or the EG is more stringent. Due to this, both of these will be in the reissued permit. The monitoring frequency will remain at once per month.

### **Fecal Coliform and *E. coli***

The maximum fecal coliform limit, 400 n/100 ml, in the current permit is based on the Federal Effluent Guidelines. The basis for the current permit's average limit, of 200 fecal coliform/100ml, was the water quality standard in effect at that time. The current applicable

water quality standard for bacteria is *E. coli*, at 126 bacteria/100ml. DEQ collated data for both parameters show that 200 fecal coliform is estimated to be about equal to 129 *E. coli*. Since this data was not collected solely from meat packing wastewater, the WQS is used as the limit rather than the estimate.

In accordance with Agency guidance, the new bacteria standards must be included in existing VPDES permits upon reissuance. This is due to the fact that an EPA approved TMDL contains a waste load allocation for bacteria, of  $1.07 \times 10^{12}$  cfu/yr, for this facility. The *E. coli* limit is a geometric mean and will apply at all times. The limit of 126/100mL is equivalent to  $0.035 \times 10^{12}$  cfu/year at the maximum 30 day average flow of 0.026 MGD.

### **Total Residual Chlorine**

Chlorine is used to reduce bacteria in the effluent. Monitoring to assure adequate disinfection is necessary since bacteria are tested for only once a week. Chlorine should be maintained at 1.5 mg/L in the contact tank since the stream is within 15 miles of a public water supply intake.

For protection of aquatic life, the current permit contains a maximum daily and monthly average limit of 11 ug/L. Current agency procedures, contained in GM-00-2011, were followed to calculate the need for a more stringent numeric limitation. The agency's aWLA and STATS software indicates that a 28 ug/L maximum daily and a 14 ug/L monthly average limit are necessary to protect water quality. Since the current permit limitation is less stringent than the limitations calculated for this permit reissuance, antibacksliding requires that the more stringent limitation be placed in the permit. The aWLA and STAT EXE printouts are included in Appendix C.

### **Other Water Quality Standard (WQS) Pollutants**

Other WQS pollutants found in the effluent are compared to a calculated waste load allocation using the Agency MSTRANI spreadsheet (version 2). The stats exe program is run for each pollutant present, as indicated at the beginning of this section, page 6. Effluent limits are not needed for any of these pollutants, as detailed below. Since some of these pollutants may affect aquatic life and the evaluation is based on certain assumptions, additional data should be collected. This will be addressed in a permit special condition.

There is no hardness data for the receiving stream. The hardness of the receiving stream was assumed to be equal to the hardness of the effluent, 34 mg/L. Since Gunnoe is near the headwaters of the receiving stream and since water used by Gunnoe is supplied by their own wells and should have a similar quality as the springs that create the stream.

For pollutants that have non-carcinogenic human health WQSs only, such as nitrate and gross beta activity, a mass balance is used rather than the MSTRANI spreadsheet and the STATS program. Since the nearest public water supply intake is over 15 miles downstream,

additional dilution is used to calculate these WLAs Stream flow at 30Q5 is used allowing the entire drainage area from Roaring Run, 3 51 sq mi

For nitrate

$$WLA = [Cr(Qd+Qs)-QsCs]/Qd = 72 \text{ mg/L}$$

Where WLA = waste load allocation (concentration)

Qd = effluent flow = 0 026 mgd

Qs = flow (30Q5) = 0 16 mgd

Cs = stream concentration (background) = 0

Cr = Human health criteria from the standards = 10 mg/L

Gross alpha activity

$$WLA = 108 \text{ pCi/L}$$

Where

Cr = Human health criteria from the standards = 15 pCi/L

Gross beta activity

A WLA cannot be calculated since the WQS is expressed as a dose from drinking water Human health screening criteria from the waterworks regulations is 50 pCi/L

A dilution of over a factor of 6x is available at the mouth of Roaring Run Since this dilutes the 71 pCi/L in the effluent to less than the screening criteria, an effluent limit is not needed

### **Reduced Monitoring**

In accordance with the agency's VPDES Permit Manual (4/01), only facilities having exemplary operations that consistently meet permit requirements are considered for reduced monitoring To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, or NOVs, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years The facility is scheduled to receive a Warning Letter, for failure to submit water quality standards monitoring required by the current permit by the due date As such, the facility is not eligible for reduced monitoring

### **Storm Water**

There are no point source discharges of regulated storm water associated with industrial activity that originates from this site However, there are a couple of activities that have the potential to contaminate storm water that are not authorized by this permit and must be stopped Truck trailers are washed in a gravel area and the trench drains adjacent to the loading dock do not appear to stop process water from running into the truck loading area

Truck washing should be performed so that storm water will not wash away soap or

pollutants removed from the trailers Routing of trailer wash water to the WWTP would be one way handle the wash water Wash water may not be disposed of underground without approval of the EPA Underground Injection Control Program

A BMP should be developed to prevent wash water overspray from entering the truck loading area This is added as a permit special condition

**17 Antibacksliding Statement**

All limits are at least as stringent as in the previous permit

**18 Compliance Schedules**

There are no compliance schedules in the reissued permit

**19 Special Conditions**

**a Additional Limitations and Monitoring Requirements for Total Residual Chlorine (TRC) (Special Condition I B )**

Rationale This Special Condition is in accordance with the current Agency procedures with regards to chlorine

**b Compliance Reporting Under Part I A (Special Condition I C 1)**

Rationale Authorized by *VPDES Permit Regulation*, 9 VAC 25-31-190 J 4 and 220 I This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion The condition also establishes protocols for calculation of reported values

**c Notification Levels (Special Condition I C 2)**

Rationale Required by *VPDES Permit Regulation*, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural discharges

**d Materials Handling/Storage (Special Condition I C 3)**

Rationale 9 VAC 25-31-50 A 1 prohibits the discharge of any wastes into the State waters unless authorized by the permit Code of Virginia §62 1-44 16 and §62 1-44 17 authorizes the Board to regulate the discharge of industrial waste or other waste

**e O&M Manual Requirement (Special Condition I C 4 )**

Rationale Required by Code of Virginia § 62.1-44.16, *VPDES Permit Regulation*, 9 VAC 25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this.

**f Licensed Operator Requirement (Special Condition I C 5)**

Rationale Required by *VPDES Permit Regulation*, 9 VAC 25-31-200 D and The Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq ), requires licensure of operators.

**g Total Maximum Daily Load (TMDL) Reopener (Special Condition I C 6)**

Rationale Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

**h Water Quality Criteria Reopener (Special Condition I C 7)**

Rationale *VPDES Permit Regulation*, 9 VAC 25-31-220 D requires effluent limitations to be established which will contribute to the attainment or maintenance of the water quality standards.

**i Water Quality Criteria Monitoring (Special Condition I C 8)**

Rationale State Water Control Law § 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. To ensure that water quality standards are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Part I, Attachment A.

Only limited data, submitted with the application, indicates that the WWTP nitrifies ammonia to nitrate. Monthly data should be collected for one year to show whether this is affected by cold weather. Dissolved zinc should also be tested, since this pollutant has been found in the effluent several times. Monitoring should be performed in the third year of the permit and submitted with the permit application on Attachment A that is provided with the permit.

**j Best Management Practices (Special Condition I C 9)**

Rationale *VPDES Permit Regulation*, 9VAC25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law

Specifically, a plan must be developed and implemented to direct all floor wash water to the WWTP No wash water is allowed to drift out of the building to contaminate storm water Truck wash water may not be discharged onto the ground and may also be directed to the WWTP

**k Instream Monitoring (Special Condition I C 10)**

Rationale State Water Control Law §62 1-44 21 authorizes the Board to request information needed to determine the discharge's impact on State waters Stream data, upstream of the facility discharge, is needed to evaluate the impact of ammonia and dissolved metals on Roaring Run At a minimum, quarterly hardness samples, to represent seasonal variation, should be collected for a year Monthly field analysis, upstream of the discharge, for at least a year should be made for temperature and pH to allow the instream ammonia criteria to be established Effluent temperature should be collected on the same day as stream temperature A brief study plan should be submitted prior to sampling to provide assurance that all parameters needed are included

**l Toxics Monitoring Program (Special Conditions I D )**

Rationale *VPDES Permit Regulation*, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act DEQ guidance memo 00-2012 recommends TMP testing for animal slaughtering facilities In addition, the discharge from Outfall 001 comprises about 66 percent of the river at low flow, it is prudent to conduct toxicity testing

Testing shall be conducted with a vertebrate and an invertebrate on a quarterly basis Both acute and chronic testing is needed Since the discharge composes a high percentage of the stream, the No Observed Adverse Effect Concentration [NOAEC] should be reported for the acute test At least one of each test annually shall be conducted during times when the discharge is expected to contain wastewater from the winter slaughtering operations

**m Part II, Condition Applicable to All Permits**

Rationale *VPDES Permit Regulation*, 9 VAC 25-31-190 requires all VPDES permit to contain or specifically cite the conditions listed

20 **NPDES Permit Rating Worksheet** Total Score 45

Please see **Appendix A** for a copy of the NPDES Permit Rating Worksheet

21 **Changes to Permit**

Outfall No	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	O&G, kg/d	NC		NA	0 36 ave 0 73 max	Federal EG applied	9/29/9
001	Fecal Coliform No /CML	1/mo	1/yr	200 ave 400 max	NA ave 400 max	Ave limit replaced by <i>E coli</i> limit, FEG limit cannot be removed	9/29/9
001	<i>E coli</i> No /CML	NA	1/wk	NA	126 ave	Fecal WQS replaced by <i>E coli</i>	9/29/9
001	Dissolved oxygen	NA	1/wk	NA	4 0 mg/L	Agency desktop model with new critical flows	9/29/9

**Special Conditions**

Compliance Reporting Under Part I A (Special Condition I C 1) - language updated

Water Quality Criteria Monitoring (Special Condition I C 8) – monitoring reduced to only those parameters expected to be present

Best Management Practices (Special Condition I C 9) – new condition

Instream Monitoring– new condition

Toxics Monitoring Program (Special Conditions I D ) – new condition

22 **Variances/Alternate Limits or Conditions**

Since the nearest public water supply intake is over 15 miles downstream, additional dilution is used to calculate WLAs for the protection of human health in drinking water The human health WLAs will still be easily met at the PWS intake

**23 Public Notice Information**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Lewis J Pillis at

Virginia DEQ  
Blue Ridge Regional Office  
3019 Peters Creek Road  
Roanoke, VA 24019  
540-562-6789 or [lewis.pillis@deq.virginia.gov](mailto:lewis.pillis@deq.virginia.gov)

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested, 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit, and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Regional Office by appointment.

**24 303(d) Listed Segments (TMDL)**

According to the 2008 Water Quality Assessment 305(b) and Impaired Waters 303(d) Reports, this segment of Roaring Run is not listed as impaired. Big Otter River is impaired for recreation due to high bacteria levels. This stream segment receiving the effluent contributes to the listed non attainment of fecal coliform in part I of the current approved 303(d) list. EPA approved *The Big Otter River / Elk Creek Bacteria Total Maximum Daily Load (TMDL) Study* on 2/02/2001. It contains a WLA for this discharge of  $1.07 \times 10^{12}$  cfu/year. This permit has a limit of 126 *E. coli* /100ml that is in compliance with the TMDL.

**Special Permit considerations**  
TMDL Reopener is in the permit

25 **Additional Comments**

Previous Board Action

Staff Comments The VDH commented on that there are no public water supply intakes within 15 miles downstream of the discharge

Public Comment The discharge is not controversial, however, the permittee objected to the inclusion of quarterly toxicity testing in the permit. The owner commented that 1) there was no evidence to suggest that the stream is being negatively impacted, 2) that a “fairly recent stream study conducted by the DEQ on the receiving stream found no indications of stress or limitations on the biological habitat below our outfall”, and 3) that the testing would cost over \$10,000 a year.

The staff responded to the permittee that 1) under worse case conditions used in Agency guidance, the effluent would be comprise 66% of the stream and WQS pollutants are present in the effluent, that 2) the staff has not located a stream study of the receiving stream nor has the permittee provided a copy of said study, and 3) that ten test results are needed for a statistically valid reasonable potential analysis and a list of testing labs is available if requested by the permittee to obtain competitive pricing.

List of Appendices

APPENDIX A - Flow Diagrams, USGS Map, Site Visit Memo, Effluent DMR Data, NPDES Permit Rating Worksheet

APPENDIX B - Flow Frequency Memorandum, Receiving Stream data

APPENDIX C - Mix exe printout, WLA Spreadsheet, Stats exe output, Dissolved Oxygen model output, Federal Effluent Limit Guidelines

APPENDIX D - Addendum to the Big Otter River Basin Fecal Coliform TMDLs (January 2001)

## EPA Transmittal Checklist

### Part I State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence

Facility Name Gunnoe Sausage Company Inc

NPDES Permit Number VA0001449

Permit Writer Name Lewis J Pillis

Date October 13, 2009

Major [X]

Minor [ ]

Industrial [X]

Municipal [ ]

#### I A. Draft Permit Package Submittal Includes

	Yes	No	N/A
1 Permit Application?	x		
2 Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	x		
3 Copy of Public Notice?		x	
4 Complete Fact Sheet?	x		
5 A Priority Pollutant Screening to determine parameters of concern?	x		
6 A Reasonable Potential analysis showing calculated WQBELs?	x		
7 Dissolved Oxygen calculations?	X		
8 Whole Effluent Toxicity Test summary and analysis?		x	
9 Permit Rating Sheet for new or modified industrial facilities?	x		

#### I B Permit/Facility Characteristics

	Yes	No	N/A
1 Is this a new, or currently unpermitted facility?		x	
2 Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	x		
3 Does the fact sheet or permit contain a description of the wastewater treatment process?	x		

#### I B Permit/Facility Characteristics – cont

	Yes	No	N/A
4 Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		x	

5	Has there been any change in streamflow characteristics since the last permit was developed?	x		
6	Does the permit allow the discharge of new or increased loadings of any pollutants?		x	
7	Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	x		
8	Does the facility discharge to a 303(d) listed water?	x		
a	Has a TMDL been developed and approved by EPA for the impaired water?	x		
b	Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	x		
c	Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	x		
9	Have any limits been removed, or are any limits less stringent, than those in the current permit?		x	
10	Does the permit authorize discharges of storm water?		x	
11	Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?	x		
12	Are there any production-based, technology-based effluent limits in the permit?	x		
13	Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		x	
14	Are any WQBELs based on an interpretation of narrative criteria?		x	
15	Does the permit incorporate any variances or other exceptions to the State's standards or regulations?	x		
16	Does the permit contain a compliance schedule for any limit or condition?		x	
17	Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		x	
18	Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	x		
19	Is there any indication that there is significant public interest in the permit action proposed for this facility?		x	
20	Have previous permit, application, and fact sheet been examined?	x		

## Part II NPDES Draft Permit Checklist

### Region III NPDES Permit Quality Review Checklist – For Non-Municipals (To be completed and included in the record for all non-POTWs)

II A. Permit Cover Page/Administration	Yes	No	N/A
1 Does the fact sheet <b>or</b> permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	x		
2 Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	x		

II B. Effluent Limits – General Elements	Yes	No	N/A
1 Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	x		
2 Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	x		

II C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1 Is the facility subject to a national effluent limitations guideline (ELG)?	x		
a If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?	x		
b If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			x
2 For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	x		
3 Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?		x	
4 For all limits that are based on production or flow, does the record indicate that the calculations are based on a “reasonable measure of ACTUAL production” for the facility (not design)?	x		
5 Does the permit contain “tiered” limits that reflect projected increases in production or flow?		x	
a If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			x
6 Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	x		

<b>II C Technology-Based Effluent Limits (Effluent Guidelines &amp; BPJ) – cont</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>
7	Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?		X fecal	
8	Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

<b>II D Water Quality-Based Effluent Limits</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>
1	Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2	Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3	Does the fact sheet provide effluent characteristics for each outfall?	X		
4	Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a	If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b	Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c	Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d	Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			X
e	Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5	Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6	For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7	Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8	Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		


<b>II E Monitoring and Reporting Requirements</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
1 Does the permit require at least annual monitoring for all limited parameters?	x		
a If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			x
2 Does the permit identify the physical location where monitoring is to be performed for each outfall?	x		
3 Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?	x		

<b>II F Special Conditions</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
1 Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	x		
a If yes, does the permit adequately incorporate and require compliance with the BMPs?	x		
2 If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	x		
3 Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	x		

II G Standard Conditions	Yes	No	N/A
1 Does the permit contain all 40 CFR 122 41 standard conditions or the State equivalent (or more stringent) conditions?	x		
List of Standard Conditions – 40 CFR 122 41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2 Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122 42(a)]?	x		

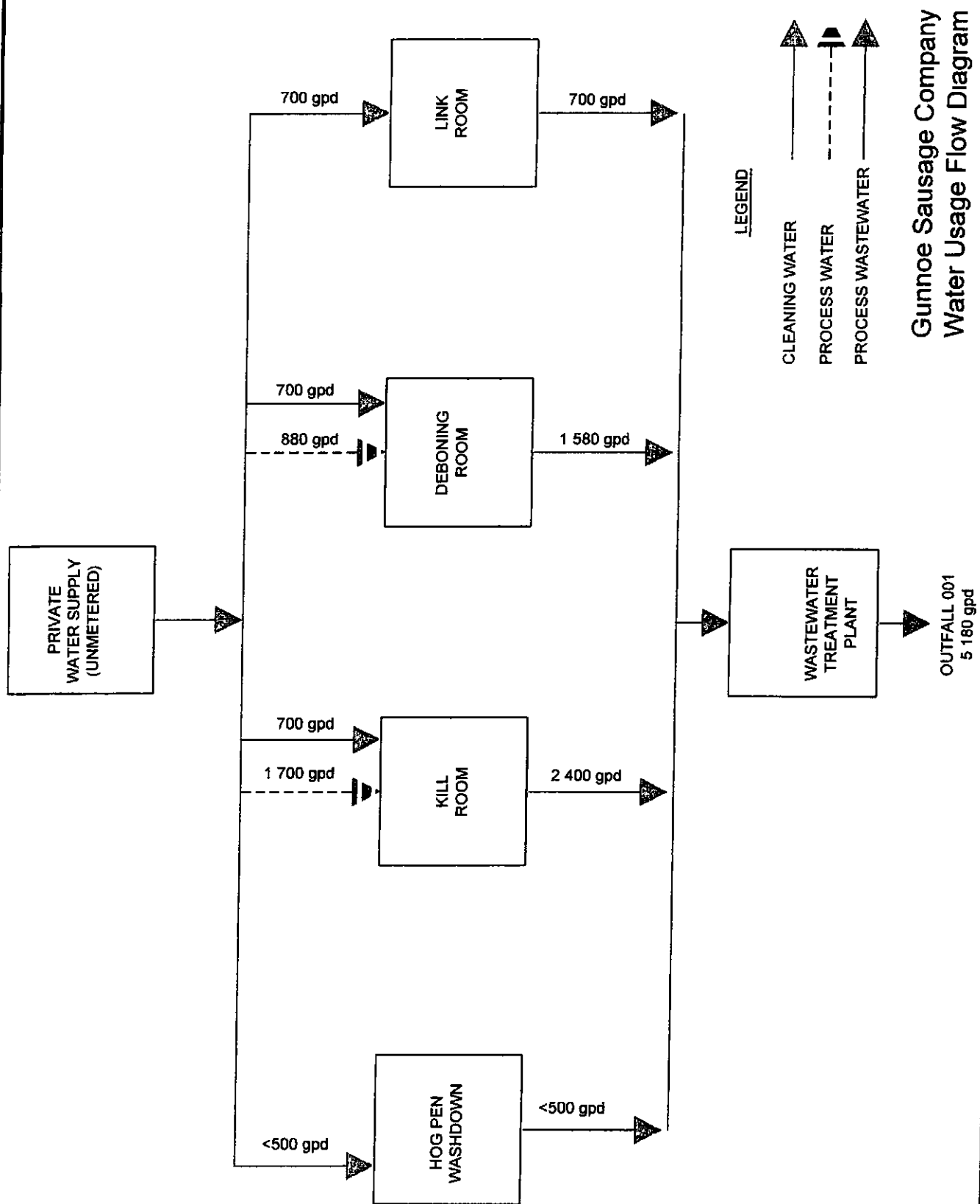
### Part III Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge

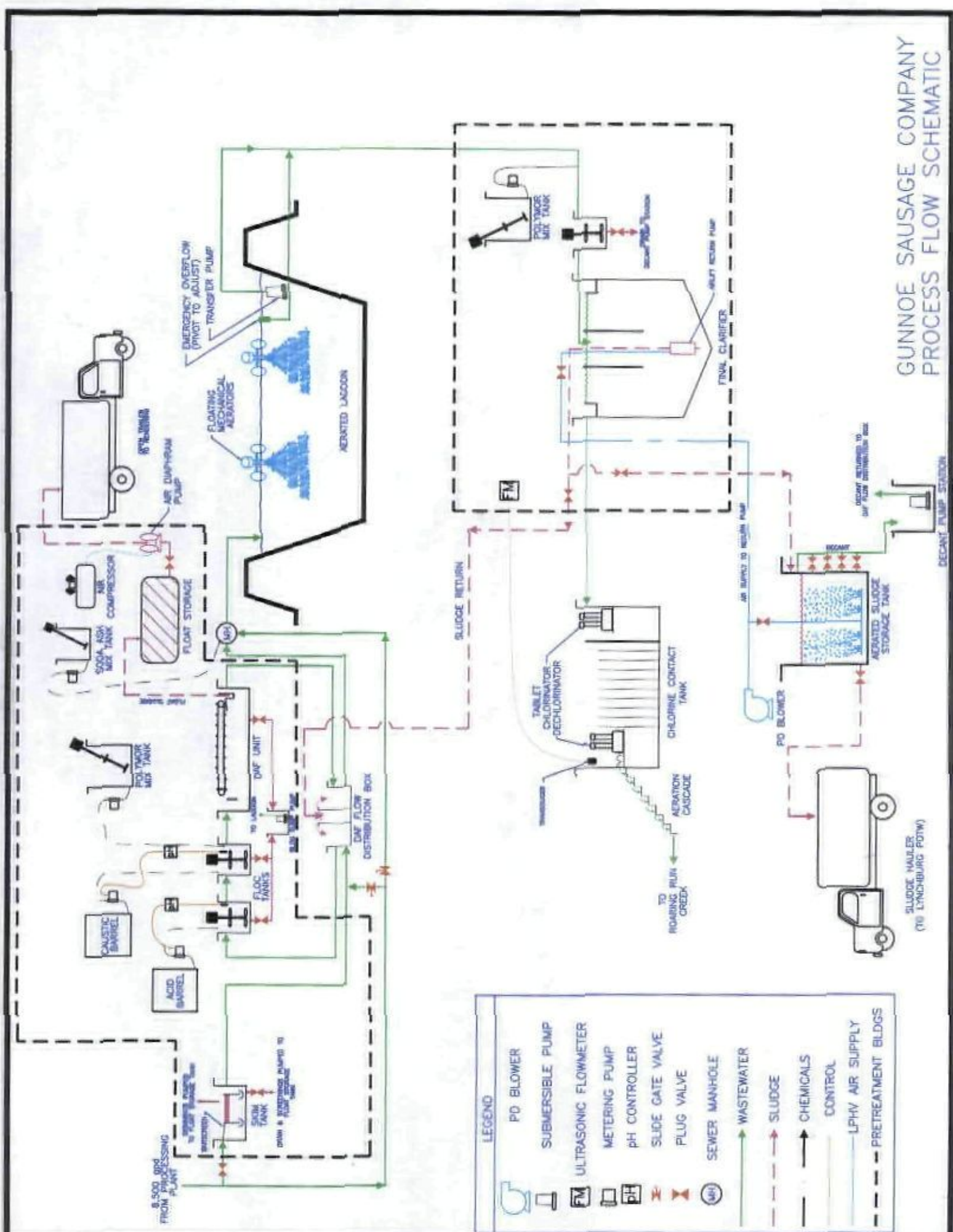
Name	<u>Lewis J Pillis</u>
Title	<u>Water Permit Writer</u>
Signature	<u></u>
Date	<u>October 13, 2009</u>

’ **APPENDIX A**  
Facility Data

Site/Flow Diagram  
USGS Map  
Site Visit Memo  
DMR Data  
NPDES Rating Worksheet



**Gunnoe Sausage Company  
Water Usage Flow Diagram**

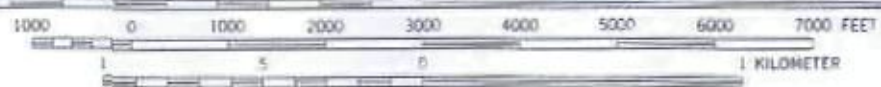


GUNNOE SAUSAGE COMPANY  
PROCESS FLOW SCHEMATIC

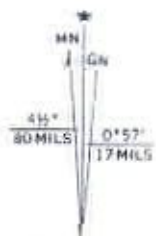
GUNNOE SAUSAGE COMPANY, INC.  
GOODE, VIRGINIA

ONE MILE RADIUS

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL



UTM GRID AND 1965 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242  
AND VIRGINIA DIVISION OF MINERAL RESOURCES, CHARLOTTESVILLE, VIRGINIA 22903  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

# MEMORANDUM

## DEPARTMENT OF ENVIRONMENTAL QUALITY *Blue Ridge Regional Office*

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT Site Visit, Gunnoe Sausage Company, VA0001449

TO File

FROM Lewis Pillis



DATE August 14, 2009

### COPIES

Monday, August 10, 2009, a site visit was performed to supply information for the permit's reissuance. Mr. Craig Gunnoe, Tim Maynard, Warren Peace and Terry Dooley were present during the visit. There were no hogs at the facility at the time of the inspection. Normally, there is discharge from the WWTP only during slaughtering and production. Production is higher in the winter months, about three separate times. WWTP discharge will be continuous and last from 1 week to 1 month during each of these times. In the summer, there will be a discharge only for a few days at a time.

Water is supplied by two off-site deep wells. Data supplied to VDH is available.

A new DAF was fabricated and installed in May 2009, and was fully operational in June 2009. Polymer is used in the final clarifier. James Adams of Control Equipment is reportedly formulating the polymer. However, an MSDS for Ashland CEKA 4645 was supplied. The polymer drum label was not legible, so that it could not be verified that CEKA 4645 was being used (and not a Control Equipment reformulation of the product). It was stated that the polymer may be changed in the future. Mr. Craig Gunnoe will email a copy of the MSDS for the product to be used.

The inclusion of zinc and dissolved oxygen limits in the permit was discussed. Warren Peace thought that the DAF was not operational when the metals sample was collected. He also believed that the result was total zinc. [Note – The lab report shows that zinc was analyzed on 4/27/2009, a sample date was not provided.]

A stream study by the DEQ Culpepper field group may have included chemical data, such as hardness, as well as flow. Warren will supply a copy of the report from DEQ-Culpepper, if it is available. Effluent dissolved oxygen is routinely measured, so this would not be a new requirement for the facility.

Areas that will contribute to storm water at the facility were observed. The facility is in the bottom of a hollow and the plant sits on sloping land. There are four grated yard drains in the truck loading areas, two in the front of the plant and two on the upper side. The loading dock was being washed at the time of the visit. Even though there was a trench drain on the loading dock to route wash water to the WWTP, overspray from floor wash water was entering the front yard drains. There was a small amount of trash and small pieces from wooden pallets in the grate of the drain. This water is not treated and flows to a spring branch and then the receiving stream downstream of the WWTP effluent. The drains from the upper side enter the stream upstream of the WWTP effluent.

The holding pen roof is galvanized and mostly flows onto the asphalt. A 250 gal fuel oil tank is under the edge of the roof, however any spills would have to flow over asphalt for 40-50 feet before they would enter surface water. There was no evidence of fuel spills. There is a yard drain close to the plant building and downgradient of the holding pen is routed to the WWTP. Air compressor condensate and one roof drain from the holding pen enter this drain. A truck maintenance building was upgradient of the plant and was surrounded by gravel. The used oil tank, beside the building, was contained by a berm. A truck was being washed in a gravel area beside the building during the visit. It was noted that this occurs about once a week.

Used pallets are burned along with brush from the site. The pallets appeared clean. A pistol practice target was set up at the edge of the gravel area at the base of a hill, adjacent to a drainage ditch. It was mentioned that this could be source of lead in storm water runoff.

Gunnoe Sausage Company  
VA0001449

		BOD <sub>5</sub>			TSS		
		mg/L	Mo Ave	Max	mg/L	Mo Ave	Max
permit limit =>		NA	kg/d	kg/d	NA	kg/d	kg/d
			0 55	1 1		1 0	2 0
2006	1	21	0 95	0 95	2	0 09	0 09
	2	<QL	<QL	<QL	2	0 08	0 08
	3	<QL	<QL	<QL	<QL	<QL	<QL
	4	<QL	<QL	<QL	<QL	<QL	<QL
	5	<QL	<QL	<QL	<QL	<QL	<QL
	6	<QL	<QL	<QL	1	0 03	0 03
	7	<QL	<QL	<QL	2	0 07	0 07
	8	<QL	<QL	<QL	1	0 03	0 03
	9	<QL	<QL	<QL	2	0 09	0 09
	10	<QL	<QL	<QL	2	0 007	0 007
	11	<QL	<QL	<QL	<QL	<QL	<QL
	12	<QL	<QL	<QL	1	0 03	0 03
2007	1	<QL	<QL	<QL	<QL	<QL	<QL
	2	<QL	<QL	<QL	<QL	<QL	<QL
	3	<QL	<QL	<QL	<QL	<QL	<QL
	4	<QL	<QL	<QL	<QL	<QL	<QL
	5	<QL	<QL	<QL	1	0 06	0 06
	6	<QL	<QL	<QL	<QL	<QL	<QL
	7	<QL	<QL	<QL	1	0 06	0 06
	8	<QL	<QL	<QL	<QL	<QL	<QL
	9	<QL	<QL	<QL	<QL	<QL	<QL
	10	3	0 01	0 01	1	0 004	0 004
	11	5	0 1	0 11	3	0 06	0 07
	12	<QL	<QL	<QL	<QL	<QL	<QL
2008	1	7	0 21	0 21	<QL	<QL	<QL
	2	<QL	<QL	<QL	<QL	<QL	<QL
	3	2	0 09	0 09	1 8	0 08	0 08
	4	3	0 17	0 17	1 6	0 11	0 11
	5	<QL	<QL	<QL	<QL	<QL	<QL
	6	<QL	<QL	<QL	<QL	<QL	<QL
	7	<QL	<QL	<QL	<QL	<QL	<QL
	8	<QL	<QL	<QL	<QL	<QL	<QL
	9	<QL	<QL	<QL	<QL	<QL	<QL
	10	<QL	<QL	<QL	<QL	<QL	<QL
	11	<QL	<QL	<QL	<QL	<QL	<QL
	12	2	0 12	0 12	1 3	0 08	0 08
2009	1	2	0 11	0 11	1 2	0 07	0 07
	2	3	0 17	0 17	4 7	0 26	0 26
	3	<QL	<QL	<QL	<QL	<QL	<QL
	4	<QL	<QL	<QL	1 8	0 02	0 02
	5	<QL	<QL	<QL	<QL	<QL	<QL
	6	3	0 17	0 17	<QL	<QL	<QL
	7	<QL	<QL	<QL	1 7	0 06	0 06

Gunnoe Sausage Company  
VA0001449

		COLIFORM, FECAL No /100 ml		OIL & GREASE mg/L
2006	1	<QL	<QL	<QL
	2	<QL	<QL	<QL
	3	<QL	<QL	<QL
	4	<QL	<QL	<QL
	5	<QL	<QL	<QL
	6	<QL	<QL	<QL
	7	<QL	<QL	<QL
	8	<QL	<QL	<QL
	9	<QL	<QL	<QL
	10	<QL	<QL	<QL
	11	<QL	<QL	<QL
	12	<QL	<QL	<QL
2007	1	<QL	<QL	<QL
	2	2	2	<QL
	3	<QL	<QL	<QL
	4	4	4	<QL
	5	<QL	<QL	<QL
	6	<QL	<QL	<QL
	7	2	2	6
	8	<QL	<QL	<QL
	9	<QL	<QL	9
	10	<QL	<QL	<QL
	11	<QL	<QL	<QL
	12	17	17	<QL
2008	1	4	4	<QL
	2	2	2	<QL
	3	30	30	<QL
	4	<QL	<QL	<QL
	5	<QL	<QL	<QL
	6	<QL	<QL	<QL
	7	<QL	<QL	<QL
	8	<QL	<QL	<QL
	9	<QL	<QL	<QL
	10	<QL	<QL	<QL
	11	<QL	<QL	<QL
	12	<QL	<QL	<QL
2009	1	<QL	<QL	<QL
	2	<QL	<QL	<QL
	3	<QL	<QL	<QL
	4	<QL	<QL	<QL
	5	2	2	<QL
	6	<QL	<QL	<QL
	7	<QL	<QL	<QL

Gunnoe Sausage Company  
VA0001449

		FLOW MGD		annual ave	
		Mo ave	Max		
2006	1	0 0141	0 0175		
	2	0 0099	0 0141		
	3	0 0151	0 0247		
	4	0 0077	0 0121		
	5	0 0064	0 0093		
	6	0 0063	0 0102		
	7	0 007	0 0088		
	8	0 0062	0 0104		
	9	0 012	0 0367		
	10	0 009	0 0119		
	11	0 0108	0 0192		
	12	0 0162	0 0359	0 01	
2007	1	0 0076	0 0139		
	2	0 0149	0 0208		
	3	0 0121	0 0182		
	4	0 0107	0 0178		
	5	0 0111	0 0151		
	6	0 0148	0 0249		
	7	0 0098	0 0205		
	8	0 0088	0 0164		
	9	0 0103	0 0188		
	10	0 0095	0 0154		
	11	0 0122	0 0165		
	12	0 0129	0 0212	0 011	
2008	1	0 0137	0 0174		
	2	0 02	0 0362		
	3	0 0191	0 0352		
	4	0 0195	0 04		
	5	0 0183	0 0269		
	6	0 02	0 0299		
	7	0 0198	0 0226		
	8	0 0184	0 023		
	9	0 0213	0 034		
	10	0 0101	0 0146		
	11	0 0136	0 226		
	12	0 0242	0 0396	0 018	
2009	1	0 026	0 0389		IWC = 67%
	2	0 0191	0 0243		
	3	0 0172	0 021		
	4	0 0092	0 0316	0 018	
	5	0 0144	0 025		
	6	0 0201	0 0375		
	7	0 0201	0 0375		

Gunnoe Sausage Company  
VA0001449

	pH			pH sorted				
	Min	Max						
2006	1	6.5	7.6	1	8.4	44	7.1	
	2	6.6	7.4	2	8.3	45	7.1	
	3	6.5	6.7	3	8.2	46	7.1	
	4	6.7	7	4	8.2	47	7.1	
	5	6.2	7.2	5	8	48	7.1	
	6	6.6	7.7	6	8	49	7.1	
	7	6.7	7.5	7	8	50	7	
	8	6.7	7.3	8	8	90%	51	6.9
	9	6.6	7.6	9	7.9	52	6.9	
	10	7.5	8	10	7.9	53	6.9	
	11	7.3	7.8	11	7.8	54	6.8	
	12	6.8	7.6	12	7.8	55	6.8	
2007				13	7.8	56	6.8	
	1	7.1	7.4	14	7.7	57	6.8	
	2	7.2	8.4	15	7.7	58	6.8	
	3	7.1	8.3	16	7.6	59	6.7	
	4	6.7	6.8	17	7.6	60	6.7	
	5	6.1	7.3	18	7.6	61	6.7	
	6	7.4	8	19	7.6	62	6.7	
	7	7.3	8.2	20	7.6	63	6.7	
	8	7.6	8	21	7.6	64	6.7	
	9	7.8	8.2	22	7.6	65	6.6	
	10	7.3	7.6	23	7.6	66	6.6	
	11	7.6	7.9	24	7.5	67	6.6	
2008	12	7.5	7.6	25	7.5	68	6.6	
				26	7.5	69	6.6	
	1	7.4	7.5	27	7.5	70	6.6	
	2	7.6	7.8	28	7.4	71	6.6	
	3	6.8	7.4	29	7.4	72	6.5	
	4	6.4	7.3	30	7.4	73	6.5	
	5	6.6	7.1	31	7.4	74	6.5	
	6	6.4	6.8	32	7.4	75	6.5	
	7	6.6	6.9	33	7.3	76	6.5	
	8	6.5	7.1	34	7.3	77	6.4	
	9	7.2	7.7	35	7.3	78	6.4	
	10	6.8	7.3	36	7.3	79	6.2	
2009	11	6.6	6.9	37	7.3	80	6.1	
	12	6.5	7.3	38	7.3			
				39	7.3			
	1	6.6	7.1	40	7.3			
	2	6.9	7.9	41	7.2			
	3	6.7	8	42	7.2			
	4	6.5	7.1	43	7.2			
	5	6.5	6.8					
	6	6.4	7.3					
	7	6.7	6.9					

# NPDES PERMIT RATING WORK SHEET

NPDES NO VA0001449

- ☐ Regular Addition  
☐ Discretionary Addition  
☒ Score change but no status change  
☐ Deletion

Facility Name Gunnoe Sausage Company, Inc

City Cifax Bedford County

Receiving Water Roaring Run

Reach Number \_\_\_\_\_

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

- 1 Power output 500 MW or greater (not using a cooling pond/lake)  
 2 A nuclear power plant  
 3 Cooling water discharge greater than 25% of the receiving stream s  
 7Q10 flow rate  
☐ YES score is 600 (stop here) ☒ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100 000?

- ☐ YES score is 700 (stop here)  
☒ NO (continue)

## FACTOR 1 Toxic Pollutant Potential

PCS SIC Code \_\_\_\_\_ Primary SIC Code 2011 Other SIC Codes 2013  
 Industrial Subcategory Code 003 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3	3	15	<input type="checkbox"/> 7	7	35
<input checked="" type="checkbox"/> 1	1	5	<input type="checkbox"/> 4	4	20	<input type="checkbox"/> 8	8	40
<input type="checkbox"/> 2	2	10	<input type="checkbox"/> 5	5	25	<input type="checkbox"/> 9	9	45
			<input type="checkbox"/> 6	6	30	<input type="checkbox"/> 10	10	50

Code Number Checked 01

Total Points Factor 1 05

## FACTOR 2 Flow/Stream Flow Volume (Complete either Section A or Section B check only one)

### Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)	Code	Points
Type I Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II Flow < 1 MGD	<input type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

### Section B ☐ Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
Type I/III	< 10 %	<input type="checkbox"/> 41	0
	10 % to < 50 %	<input type="checkbox"/> 42	10
	> 50 %	<input type="checkbox"/> 43	20
Type II	< 10 %	<input type="checkbox"/> 51	0
	10 % to < 50 %	<input type="checkbox"/> 52	20
	> 50 %	<input checked="" type="checkbox"/> 53	30

Code Checked from Section A or B 53

Total Points Factor 2 30

**FACTOR 3 Conventional Pollutants***(only when limited by the permit)*NPDES NO VA0001449

A Oxygen Demanding Pollutant (check one)

☒ BOD ☐ COD ☐ Other \_\_\_\_\_

Permit Limits (check one)			Code	Points
<input checked="" type="checkbox"/>	X	< 100 lbs/day	1	0
<input type="checkbox"/>		100 to 1000 lbs/day	2	5
<input type="checkbox"/>		> 1000 to 3000 lbs/day	3	15
<input type="checkbox"/>		> 3000 lbs/day	4	20

Code Checked 1Points Scored 00

B Total Suspended Solids (TSS)

Permit Limits (check one)			Code	Points
<input checked="" type="checkbox"/>	X	< 100 lbs/day	1	0
<input type="checkbox"/>		100 to 1000 lbs/day	2	5
<input type="checkbox"/>		> 1000 to 5000 lbs/day	3	15
<input type="checkbox"/>		> 5000 lbs/day	4	20

Code Checked 1Points Scored 00

C Nitrogen Pollutant (check one)

☐ Ammonia ☐ Other N/A

Permit Limits (check one)		Nitrogen Equivalent	Code	Points
<input type="checkbox"/>		< 300 lbs/day	1	0
<input type="checkbox"/>		300 to 1000 lbs/day	2	5
<input type="checkbox"/>		> 1000 to 3000 lbs/day	3	15
<input type="checkbox"/>		> 3000 lbs/day	4	20

Code Checked   Points Scored 00Total Points Factor 3 00**FACTOR 4 Public Health Impact**

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries or other methods of conveyance that ultimately get water from the above referenced supply

☒ YES (If yes check toxicity potential number below)☐ NO (If no go to Factor 5)

Determine the *human health* toxicity potential from Appendix A Use the same SIC code and subcategory reference as in Factor 1 (Be sure to use the human health toxicity group column ☐ check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3	3	0	<input type="checkbox"/> 7	7	15
<input checked="" type="checkbox"/> 1	1	0	<input type="checkbox"/> 4	4	0	<input type="checkbox"/> 8	8	20
<input type="checkbox"/> 2	2	0	<input type="checkbox"/> 5	5	5	<input type="checkbox"/> 9	9	25
			<input type="checkbox"/> 6	6	10	<input type="checkbox"/> 10	10	30

Code Number Checked 01Total Points Factor 4 00

**FACTOR 5 Water Quality Factors**NPDES NO VA0001449

**A** Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology based federal effluent guidelines or technology based state effluent guidelines) or has a wasteload allocation been assigned to the discharge

<input checked="" type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

**B** Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

<input checked="" type="checkbox"/>	Yes	Code 1	Points 0
<input type="checkbox"/>	No	2	5

**C** Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

<input type="checkbox"/>	Yes	Code 1	Points 10
<input checked="" type="checkbox"/>	No	2	0

Code Number Checked A 1 B 1 C 2Points Factor 5 A 10 + B 0 + C 0 = 10 TOTAL**FACTOR 6 Proximity to Near Coastal Waters N/A**

**A** Base Score Enter flow code here (from Factor 2) \_\_\_\_\_

Enter the multiplication factor that corresponds to the flow code \_\_\_\_\_

Check appropriate facility HPRI Code (from PCS)

HPRI#	Code	HPRI Score	Flow Code	Multiplication Factor
<input type="checkbox"/> 1	1	20	11 31 or 41	0 00
<input type="checkbox"/> 2	2	0	12 32 or 42	0 05
<input type="checkbox"/> 3	3	30	13 33 or 43	0 10
<input type="checkbox"/> 4	4	0	14 or 34	0 15
<input type="checkbox"/> 5	5	20	21 or 51	0 10
			22 or 52	0 30
			23 or 53	0 60
			24	1 00

HPRI code checked \_\_\_\_\_

Base Score (HPRI Score) \_\_\_\_\_ X (Multiplication Factor) \_\_\_\_\_ = \_\_\_\_\_ (TOTAL POINTS)

**B** Additional Points ☐ NEP Program

For a facility that has an HPRI code of 3 does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

**C** Additional Points ☐ Great Lakes Area of Concern

For a facility that has an HPRI code of 5 does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

Code Number Checked

A \_\_\_\_\_ B \_\_\_\_\_ C \_\_\_\_\_

Points Factor 6 A \_\_\_\_\_ + B \_\_\_\_\_ + C \_\_\_\_\_ = 0 TOTAL

**SCORE SUMMARY**

NPDES NO VA0001449

Factor	Description	Total Points
1	Toxic Pollutant Potential	<u>5</u>
2	Flows/Streamflow Volume	<u>30</u>
3	Conventional Pollutants	<u>0</u>
4	Public Health Impacts	<u>0</u>
5	Water Quality Factors	<u>10</u>
6	Proximity to Near Coastal Waters	<u>0</u>
TOTAL (Factors 1 through 6)		<u>45</u>

S1 Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) ☒ No

S2 If the answer to the above questions is no would you like this facility to be discretionary major?

☒ No☐ Yes (Add 500 points to the above score and provide reason below)

Reason

NEW SCORE 45OLD SCORE 35Lewis J Pillis

Permit Reviewer's Name

(540) 562 6789

Phone Number

September 30, 2009

Date

**APPENDIX B**  
Receiving Stream Data  
Flow Frequency Memo  
STORET Data

## MEMORANDUM

### DEPARTMENT OF ENVIRONMENTAL QUALITY

*Blue Ridge Regional Office*

3019 Peters Creek Road, Roanoke, Virginia 24019

**SUBJECT** Flow Frequency Determination, Gunnoe Sausage Co – VA0001449

**TO** File

**FROM** Lewis Pillis 

**DATE** September 23, 2009

#### COPIES

The Gunnoe Sausage Co , Inc discharges to Roaring Run near Bedford, VA The VADEQ conducted several flow measurements on Roaring Run from 1994 to 1998 The measurements were made above the Gunnoe Sausage discharge The measurements were correlated with the daily mean values on the same day from the continuous record gage on the Big Otter River near Evington, VA #02061500

As performed previously, these measurements and means were plotted on a log/log graph, with the best fit line having a regression coefficient of 0.90 Critical gage flows were routinely recalculated by the Charlottesville Surface Water Investigations Office using gage data through 2005 Flows at the gage dropped by 20 - 25% The drainage area upstream of the facility was recalculated using a more accurate GIS method This method of measuring the drainage area was higher than previously used and off-sets the reduced gage flow New critical flows are recalculated using the most current gage flows No withdrawals, discharges, or springs lying upstream of the measurement point are addressed in this analysis The high flow months are January through May

#### 2009 Flow Frequencies based on gage data through 2005

Big Otter gage		Roaring Run based on power eqn	
cfs		cfs	mgd
18	1Q10	0.024	0.015
21	7Q10	0.028	0.018
48	30Q5	0.069	0.045
31	30Q10	0.043	0.028
85	HF 1Q10	0.130	0.084
98	HF 7Q10	0.152	0.098
131	HF 30Q10	0.209	0.135
132	HM	0.210	0.136
320	DA	0.98	
	Jan-May		

# STORET Data

Station = 4ABOR016 26 Big Otter River downstream of Roaring Run  
 RT 24 BRIDGE  
 Watershed = VAW-L27R

Collection_Date	Field_pH	DO_Probe	Temp Celsius	Specific_Conductance	Total Hardness CaCO3 MG/L	Field_pH	Temp Celsius
9/10/1996	7.3	6.9	24.2	75	28	--	
12/3/1996	7.9	11.9	6.8	40	48	--	
3/5/1997	7.8	9	10	50	24.7	--	
6/3/1997	7.4	8.1	17.6	45	29.2		30
9/16/1997	8	7.3	21.7	95	33.7		26
12/2/1997	--	12	8	60	29.7		25
3/3/1998	7.7	11.2	9.4	50	36.5		24.3
6/2/1998	7.9	7.9	24.3	80	26.4		24.2
9/1/1998	8.5	9.9	26	105	32.7		23.7
12/2/1998	8.6	14.2	7.5	50	31		21.7
3/1/1999	--	13.3	7.5	45	36		20.7
6/2/1999	8.5	7.9	25	100	28		17.6
8/2/1999	7.8	7.5	30	130	38.3		16.9
10/4/1999	7.9	8.1	16.9	66	26.6		16.6
12/7/1999	7.8	10	7.6	51	27.8		15
2/2/2000	7.7	10.7	1	45	30.1		11.97
3/20/2000	7.16	11.79	7.5	73.6	27		10.7
4/4/2000	7.9	8.8	16.6	60	24		10
4/25/2000	6.82	10.52	11.97	68.6	17		9.4
7/17/2000	6.9	8.2	23.7	102	36		8.8
9/28/2000	--	9.4	15	66	28.3		8
11/2/2000	8.8	10.5	8.8	71	31.7		7.6
1/16/2001	8.4	13	1	49	23		7.5
3/14/2001	8.4	11.3	10.7	60	27.8		7.5
5/3/2001	8.3	9.7	20.7	81	21.2		7.5
average =>				69	30		6.8
							1
							1

**APPENDIX C**  
**Permit Limit Development**

**DEQ Dissolved Oxygen Model Input and Output**  
**Federal Effluent Guideline Calculations**  
**Waste Load Allocation Spreadsheet**  
**Toxics Management Program Spreadsheet**  
**STATS EXE Printouts**

# Gunnoe Dissolved Oxygen Model

Run #	BOD	TKN	DO	7Q10	Initial do upon mix	NOTES
1	20	5	0	0.013	2.605	
2	20	5	0	0.018	3.197	
3	20	5	7	0.018	7.334	
4	20	5	5	0.018	6.152	
5	20	5	4	0.018	5.561	
6	20	5	3	0.018	4.97	
7	20	5	3.5	0.018	5.265	
8	20	5	3.5	0.013	4.938	
9	20	5	4	0.013	5.272	DO increases after mixing
10	21	3.18	4	0.013	5.272	DO increases after mixing
11	10	3.18	4	0.013	5.272	DO increases after mixing
12	21	3.18	4	0.018	5.561	use this run to set DO limit
13	21	3.18	3	0.018	4.97	violates

DO STD = 5.0

ammonia = 0.18 mg/L

BOD load kg/d      ave      max      conc at 0.026 MGD      conc at 0.014 MGD

0.55      6      10

1.1      11      21

# model output run 12.txt

"Model Run For C:\Documents and Settings\ljpillis\My Documents\water\Models\stream  
model\model runs\Gunnoe\Gunnoe 7Q10 of 018 DO 4 RUN12 mod On 10/5/2009 11 48 04 AM"

"Model is for ROARING RUN "

"Model starts at the GUNNOE SAUSAGE COMPANY discharge "

## "Background Data"

"7Q10"	"CBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
018,	2,	0,	7 815,	20 9

## "Discharge/Tributary Input Data for Segment 1"

"Flow"	"CBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
026,	21,	3 18,	,4,	24

## "Hydraulic Information for Segment 1"

"Length"	"width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
7,	5 997,	055,	207

## "Initial Mix Values for Segment 1"

"Flow"	"DO"	"CBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
044,	5 561,	33 068,	461,	8 411,	22 73182

## "Rate Constants for Segment 1 - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
1 4,	1 587,	20,	21 339,	4,	494,	0,	0

## "Output for Segment 1"

"Segment starts at GUNNOE SAUSAGE COMPANY"

"Total"	"Segm "	"DO"	"CBOD"	"nBOD"
"Dist "	"Dist "	"(mg/l)"	"(mg/l)"	"(mg/l)"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	5 561,	33 068,	461
1,	1,	5 768,	31 554,	454
2,	2,	5 93,	30 11,	447
3,	3,	6 065,	28 732,	441
4,	4,	6 184,	27 417,	435
5,	5,	6 292,	26 162,	429
6,	6,	6 392,	24 964,	423
7,	7,	6 486,	23 821,	417

"END OF FILE"

REGIONAL MODELING SYSTEM    VERSION 4.0  
**Model Input File for the Discharge  
to ROARING RUN**

**File Information**

File Name	C:\Documents and Settings\jlpillis\My Documents\water\Models\stream model\mo
Date Modified	July 22, 2009

**Water Quality Standards Information**

Stream Name	ROARING RUN
River Basin	Roanoke River Basin
Section	5a
Class	III - Nontidal Waters (Coastal and Piedmont)
Special Standards	PWS

**Background Flow Information**

Gauge Used	Big otter
Gauge Drainage Area	320 Sq Mi
Gauge 7Q10 Flow	13.57 MGD
Headwater Drainage Area	0 Sq Mi
Headwater 7Q10 Flow	0.018 MGD (Net includes Withdrawals/Discharges)
Withdrawal/Discharges	0 MGD
Incremental Flow in Segments	4.240625E-02 MGD/Sq Mi

**Background Water Quality**

Background Temperature	20.9 Degrees C
Background cBOD5	2 mg/l
Background TKN	0 mg/l
Background D.O.	7.815345 mg/l

**Model Segmentation**

Number of Segments	1
Model Start Elevation	838 ft above MSL
Model End Elevation	795 ft above MSL

REGIONAL MODELING SYSTEM    VERSION 4.0  
Model Input File for the Discharge  
to ROARING RUN

**Segment Information for Segment 1**

**Definition Information**

Segment Definition	A discharge enters
Discharge Name	GUNNOE SAUSAGE COMPANY
VPDES Permit No	VA0001449

**Discharger Flow Information**

Flow	0.026 MGD
cBOD5	20 mg/l
TKN	5 mg/l
D.O.	0 mg/l
Temperature	24 Degrees C

**Geographic Information**

Segment Length	0.7 miles
Upstream Drainage Area	0 Sq Mi
Downstream Drainage Area	0 Sq Mi
Upstream Elevation	838 Ft
Downstream Elevation	795 Ft

**Hydraulic Information**

Segment Width	5.999 Ft
Segment Depth	0.055 Ft
Segment Velocity	0.207 Ft /Sec
Segment Flow	0.044 MGD
Incremental Flow	0 MGD (Applied at end of segment )

**Channel Information**

Cross Section	Rectangular
Character	Moderately Meandering
Pool and Riffle	No
Bottom Type	Gravel
Sludge	None
Plants	None
Algae	None

Federal Effluent Guidelines 40 CFR Part 432 Meat Products Point Source Category  
Subpart C – Low Processing Packinghouse Subcategory

Guideline Limitations (Best Practical Technology & Best Available Technology)

Parameter	Effluent Guidelines Average (kg/Kg)	Effluent Guidelines Maximum (kg/Kg)	Effluent Limit <sup>1</sup> Average (kg/d)	Effluent Limit <sup>1</sup> Maximum (kg/d)
BOD5	0.17	0.34	0.77	1.55
TSS	0.24	0.48	1.09	2.18
Oil & Grease	0.08	0.16	0.36	0.73
Fecal Coliform <sup>2</sup>	NA	400 n/CML	NA	400n/CML
pH		6.0 - 9.0 at all times		

Notes

<sup>1</sup>Live Weight Killed (LWK) from Form 2C Application submitted for Permit Reissuance

lbs/day = 10 000  
kg/day = 4 545  
Kkg/day = 4 545

<sup>2</sup> at any time

BOD BPJ

AVE LIMIT conc at ave flow	AVE LIMIT conc at max flow	MAX LIMIT		BPJ limit	flow mgd	kg/d
		conc at ave flow	MAX LIMIT conc at max flow			
15	8	29	16			
21	11	41	22			
7	4	14	7	10	0.014	0.53
				10	0.028	0.98

10 6 21 11

0.55 1.1

mixing estimate txt

Mixing Zone Predictions for

Gunnose Sausage

Effluent Flow = 0.026 MGD  
Stream 7Q10 = 0.013 MGD  
Stream 30Q10 = 0.024 MGD  
Stream 1Q10 = 0.010 MGD  
Stream slope = 0.0109 ft/ft  
Stream width = 6 ft  
Bottom scale = 3  
Channel scale = 1

-----  
Mixing Zone Predictions @ 7Q10

Depth = 0.518 ft  
Length = 400.61 ft  
Velocity = 1.943 ft/sec  
Residence Time = 0.239 days

Recommendation

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used

-----  
Mixing Zone Predictions @ 30Q10

Depth = 0.602 ft  
Length = 352.9 ft  
Velocity = 2.143 ft/sec  
Residence Time = 0.191 days

Recommendation

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used

-----  
Mixing Zone Predictions @ 1Q10

Depth = 0.493 ft  
Length = 417.41 ft  
Velocity = 1.882 ft/sec  
Residence Time = 6161 hours

Recommendation

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used

-----  
Virginia DEQ Mixing Zone Analysis Version 2.1

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name Gunnoe Sausage Company

Permit No VA0001449

Receiving Stream Roaring Run

Version OWP Guidance Memo 00 2011 (8/24/00)

Stream Information		Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO <sub>3</sub> ) =	25 mg/L	1Q10 (Annual) =	0.015 MGD	100 %	Annual 1Q10 Mix =	100 %	Mean Hardness (as CaCO <sub>3</sub> ) =	34 mg/L		
90% Temperature (Annual) =	20.9 deg C	7Q10 (Annual) =	0.018 MGD	100 %	7Q10 Mix =	100 %	90% Temp (Annual) =	24 deg C		
90% Temperature (Wet season) =	12 deg C	30Q10 (Annual) =	0.028 MGD	100 %	30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C		
90% Maximum pH =	7.13 SU	1Q10 (Wet season) =	0.084 MGD	100 %	Wet Season 1Q10 Mix =	100 %	90% Maximum pH =	8 SU		
10% Maximum pH =	7.5 SU	30Q10 (Wet season) =	0.13 MGD	100 %	30Q10 Mix =	100 %	10% Maximum pH =	7 SU		
Tier Designation (1 or 2) =	2	30Q5 =	0.045 MGD				Discharge Flow =	0.026 MGD		
Public Water Supply (PWS) Y/N? =	Y	Harmonic Mean =	0.14 MGD							
Trout Present Y/N? =	N	Annual Average =	NA MGD							
Early Life Stages Present Y/N? =	Y									

Parameter (ug/l unless noted)	Background Conc	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0			1.2E+03	2.7E+03			3.3E+03	7.4E+03			1.2E+02	2.7E+02	3.3E+02	7.4E+02	3.3E+02
Acrolein	0			3.2E+02	7.8E+02			8.7E+02	2.1E+03			3.2E+01	7.8E+01	8.7E+01	2.1E+02	8.7E+01
Acrylonitrile <sup>f</sup>	0			5.9E+01	6.8E+00			3.8E+00	4.2E+01			5.9E+02	6.8E+01	3.8E+01	4.2E+00	3.8E+01
Aldrin <sup>c</sup>	0	3.0E+00		1.3E+03	1.4E+03	4.7E+00		8.3E+03	8.9E+03	7.5E+01		1.3E+04	1.4E+04	1.2E+00		8.3E+04
Ammonia N (mg/l) (Yearly)	0	2.06E+01	2.93E+00			3.3E+01	6.1E+00			5.16E+00	7.31E+01			8.1E+00	1.5E+00	8.1E+00
Ammonia N (mg/l) (High Flow)	0	2.86E+01	5.40E+00			1.2E+02	3.2E+01			7.14E+00	1.35E+00			3.0E+01	8.1E+00	3.0E+01
Anthracene	0			9.6E+03	1.1E+05			2.8E+04	3.0E+05			9.6E+02	1.1E+04			2.8E+03
Antimony	0			1.4E+01	4.3E+03			3.8E+01	1.2E+04			1.4E+00	4.3E+02			3.8E+00
Arsenic	0	3.4E+02	1.5E+02	1.0E+01		5.4E+02	2.5E+02	2.7E+01		8.5E+01	3.8E+01	1.0E+00		1.3E+02	6.3E+01	2.7E+00
Barium	0			2.0E+03				5.5E+03				2.0E+02		5.5E+02		5.5E+02
Benzene <sup>c</sup>	0			1.2E+01	7.1E+02			7.7E+01	4.5E+03			1.2E+00	7.1E+01			7.7E+00
Benzidine <sup>f</sup>	0			1.2E+03	5.4E+03			7.7E+03	3.4E+02			1.2E+04	5.4E+04			7.7E+04
Benzo (a) anthracene <sup>c</sup>	0			4.4E+02	4.9E+01			2.8E+01	3.1E+00			4.4E+03	4.9E+02			2.8E+02
Benzo (b) fluoranthene <sup>c</sup>	0			4.4E+02	4.9E+01			2.8E+01	3.1E+00			4.4E+03	4.9E+02			2.8E+02
Benzo (k) fluoranthene <sup>c</sup>	0			4.4E+02	4.9E+01			2.8E+01	3.1E+00			4.4E+03	4.9E+02			2.8E+02
Benzo (a) pyrene <sup>c</sup>	0			4.4E+02	4.9E+01			2.8E+01	3.1E+00			4.4E+03	4.9E+02			2.8E+02
Bis(2 Chloroethyl) Ether	0			3.1E+01	1.4E+01			8.5E+01	3.8E+01			3.1E+02	1.4E+00			8.5E+02
Bis(2 Chloroisopropyl) Ether	0			1.4E+03	1.7E+05			3.8E+03	4.6E+05			1.4E+02	1.7E+04			3.8E+02
Bromofom <sup>c</sup>	0			4.4E+01	3.8E+03			2.8E+02	2.3E+04			4.4E+00	3.8E+02			2.8E+01
Butylbenzylphthalate	0			3.0E+03	5.2E+03			8.2E+03	1.4E+04			3.0E+02	5.2E+02			8.2E+02
Cadmium	0	1.0E+00	4.4E+01	5.0E+00		1.6E+00	7.5E+01	1.4E+01		2.6E+01	1.1E+01	5.0E+01		4.1E+01	1.9E+01	1.4E+00
Carbon Tetrachloride <sup>c</sup>	0			2.5E+00	4.4E+01			1.6E+01	2.8E+02			2.5E+01	4.4E+00			1.6E+00
Chlordane <sup>c</sup>	0	2.4E+00	4.3E+03	2.1E+02	2.2E+02	3.8E+00	7.3E+03	1.3E+01	1.4E+01	6.0E+01	1.1E+03	2.1E+03	2.2E+03	9.5E+01	1.8E+03	1.3E+02
Chloride	0	8.6E+05	2.3E+05	2.5E+05		1.4E+06	3.9E+05	6.8E+05		2.2E+05	5.8E+04	2.5E+04		3.4E+05	9.7E+04	6.8E+04
TRC	0	1.9E+01	1.1E+01			3.0E+01	1.9E+01			4.8E+00	2.8E+00			7.5E+00	4.7E+00	
Chlorobenzene	0			6.8E+02	2.1E+04			1.9E+03	5.7E+04			6.8E+01	2.1E+03			1.9E+02

Parameter (ug/l unless noted)	Background Conc	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorobromomethane <sup>c</sup>	0	-	-	41E+00	34E+02	-	-	26E+01	22E+03	-	-	41E 01	34E+01	-	-	26E+00
Chloroform <sup>c</sup>	0	-	-	35E+02	29E+04	-	-	22E+03	19E+05	-	-	35E+01	29E+03	-	-	22E+02
2 Chloronaphthalene	0	-	-	17E+03	43E+03	-	-	46E+03	12E+04	-	-	17E+02	43E+02	-	-	46E+02
2 Chlorophenol <sup>d</sup>	0	-	-	12E+02	40E+02	-	-	33E+02	11E+03	-	-	12E+01	40E+01	-	-	33E+01
Chlorpyrifos	0	83E 02	41E 02	-	-	13E 01	69E 02	-	-	21E 02	10E 02	-	-	33E 02	17E 02	-
Chromium III	0	22E+02	28E+01	-	-	34E+02	47E+01	-	-	54E+01	70E+00	-	-	85E+01	12E+01	-
Chromium VI	0	16E+01	11E+01	-	-	25E+01	19E+01	-	-	40E+00	28E+00	-	-	63E+00	47E+00	-
Chromium Total	0	-	-	10E+02	-	-	-	27E+02	-	-	-	10E+01	-	-	-	27E+01
Chrysene <sup>c</sup>	0	-	-	44E 02	49E 01	-	-	29E-01	31E+00	-	-	44E 03	49E 02	-	-	28E 02
Copper	0	44E+00	32E+00	13E+03	-	-	-	36E+03	-	-	-	13E+02	-	-	-	36E+02
Cyanide	0	22E+01	52E+00	70E+02	22E+05	70E+00	55E+00	19E+03	59E+05	11E+00	81E-01	13E+02	22E+04	17E+00	14E+00	19E+02
DDD <sup>c</sup>	0	-	-	83E 03	84E 03	-	-	53E-02	54E 02	-	-	83E 04	84E-04	-	-	53E 03
DDE <sup>c</sup>	0	-	-	59E 03	59E 03	-	-	38E-02	38E 02	-	-	59E 04	59E 04	-	-	38E 03
DDT <sup>c</sup>	0	11E+00	10E 03	59E 03	59E 03	17E+00	17E 03	39E 02	38E 02	28E 01	25E-04	59E 04	59E 04	43E-01	42E-04	38E-03
Denaton	0	-	10E 01	-	-	-	17E 01	-	-	-	25E 02	-	-	-	42E-02	-
Dibenz(a,h)anthracene <sup>c</sup>	0	-	-	44E 02	49E 01	-	-	28E 01	31E+00	-	-	44E 03	49E-02	-	-	28E-02
Diethyl phthalate	0	-	-	27E+03	12E+04	-	-	74E+03	33E+04	-	-	27E+02	12E+03	-	-	74E+02
Dichloromethane	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Methylene Chloride) <sup>c</sup>	0	-	-	47E+01	16E+04	-	-	30E+02	10E+05	-	-	47E+00	16E+03	-	-	30E+01
1,2 Dichlorobenzene	0	-	-	27E+03	17E+04	-	-	74E+03	46E+04	-	-	27E+02	17E+03	-	-	74E+02
1,3 Dichlorobenzene	0	-	-	40E+02	26E+03	-	-	11E+03	71E+03	-	-	40E+01	26E+02	-	-	11E+02
1,4 Dichlorobenzene	0	-	-	40E+02	26E+03	-	-	11E+03	71E+03	-	-	40E+01	26E+02	-	-	11E+02
3,3-Dichlorobenzidine <sup>c</sup>	0	-	-	40E-01	77E 01	-	-	26E+00	49E+00	-	-	40E 02	77E 02	-	-	26E-01
Dichlorobromomethane <sup>c</sup>	0	-	-	56E+00	46E+02	-	-	36E+01	29E+03	-	-	56E 01	46E+01	-	-	36E+00
1,2 Dichloroethane <sup>c</sup>	0	-	-	38E+00	99E+02	-	-	24E+01	63E+03	-	-	38E 01	99E+01	-	-	24E+00
1,1 Dichloroethylene	0	-	-	31E+02	17E+04	-	-	85E+02	46E+04	-	-	31E+01	17E+03	-	-	85E+01
1,2 trans-dichloroethylene	0	-	-	70E+02	14E+05	-	-	19E+03	38E+05	-	-	70E+01	14E+04	-	-	19E+02
2,4 Dichlorophenol	0	-	-	93E+01	79E+02	-	-	25E+02	22E+03	-	-	93E+00	79E+01	-	-	25E+01
2,4 Dichlorophenoxy acetic acid (2,4 D)	0	-	-	10E+02	-	-	-	27E+02	-	-	-	10E+01	-	-	-	27E+01
1,2 Dichloropropane <sup>c</sup>	0	-	-	52E+00	39E+02	-	-	33E+01	25E+03	-	-	52E 01	39E+01	-	-	33E+00
1,3 Dichloropropane	0	-	-	10E+01	17E+03	-	-	27E+01	46E+03	-	-	10E+00	17E+02	-	-	27E+00
Dieldrin <sup>c</sup>	0	24E 01	56E 02	14E-03	14E-03	38E 01	95E-02	89E-03	89E-03	60E 02	14E-02	14E-04	14E-04	95E 02	24E-02	89E-04
Diethyl Phthalate	0	-	-	23E+04	12E+05	-	-	63E+04	33E+05	-	-	23E+03	12E+04	-	-	63E+03
Di, 2 Ethylhexyl Phthalate <sup>c</sup>	0	-	-	18E+01	59E+01	-	-	11E+02	38E+02	-	-	18E+00	59E+00	-	-	11E+01
2,4 Dimethylphenol	0	-	-	54E+02	23E+03	-	-	15E+03	63E+03	-	-	54E+01	23E+02	-	-	15E+02
Dimethyl Phthalate	0	-	-	31E+05	29E+06	-	-	85E+05	79E+06	-	-	31E+04	29E+05	-	-	85E+04
Di n Butyl Phthalate	0	-	-	27E+03	12E+04	-	-	74E+03	33E+04	-	-	27E+02	12E+03	-	-	74E+02
2,4 Dinitrophenol	0	-	-	70E+01	14E+04	-	-	19E+02	38E+04	-	-	70E+00	14E+03	-	-	19E+01
2 Methyl-4,6 Dinitrophenol	0	-	-	13E+01	765E+02	-	-	37E+01	21E+03	-	-	13E+00	77E+01	-	-	37E+00
2,4 Dinitrotoluene <sup>c</sup>	0	-	-	11E+00	91E+01	-	-	70E+00	58E+02	-	-	11E 01	91E+00	-	-	70E-01
Dioxin (2,3,7,8 tetrachlorodibenzo p dioxin) (ppq)	0	-	-	12E 06	12E 06	-	-	12E 06	12E 06	-	-	12E 07	12E 07	-	-	12E-07
1,2 Diphenylhydrazine <sup>c</sup>	0	-	-	40E 01	54E+00	-	-	26E+00	34E+01	-	-	40E 02	54E 01	-	-	26E 01
Alpha Endosulfan	0	22E 01	56E 02	11E+02	24E+02	35E 01	95E-02	30E+02	66E+02	55E 02	14E 02	11E+01	24E+01	87E 02	24E-02	30E+01
Beta Endosulfan	0	22E 01	56E 02	11E+02	24E+02	35E-01	95E 02	30E+02	66E+02	55E-02	14E 02	11E+01	24E+01	87E 02	24E-02	30E+01
Endosulfan Sulfate	0	-	-	11E+02	24E+02	-	-	30E+02	66E+02	-	-	11E+01	24E+01	-	-	30E+01
Endrin	0	86E 02	36E 02	76E 01	81E 01	14E 01	61E 02	21E+00	22E+00	22E 02	90E 03	76E 02	81E 02	34E 02	15E 02	21E-01
Endrin Aldehyde	0	-	-	76E 01	81E 01	-	-	21E+00	22E+00	-	-	76E 02	81E 02	-	-	21E-01

Parameter (µg/l unless noted)	Background Conc	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0			3.1E+03	2.9E+04			8.5E+03	7.9E+04			3.1E+02	2.9E+03			8.5E+02	7.9E+03			8.5E+02	7.9E+03
Fluoranthene	0			3.0E+02	3.7E+02			8.2E+02	1.0E+03			3.0E+01	3.7E+01			8.2E+01	1.0E+02			8.2E+01	1.0E+02
Fluorene	0			1.3E+03	1.4E+04			3.6E+03	3.8E+04			1.3E+02	1.4E+03			3.6E+02	3.8E+03			3.6E+02	3.8E+03
Foaming Agents	0			5.0E+02				1.4E+03				5.0E+01				1.4E+02				1.4E+02	
Gulonic	0		1.0E 02					1.7E-02				2.5E 03				4.2E-03				4.2E-03	
Hepachlor <sup>c</sup>	0	5.2E 01	3.8E 03	2.1E 03	2.1E 03	8.2E 01	6.4E 03	1.3E 02	1.3E 02	1.3E-01	9.5E 04	2.1E 04	2.1E 04	2.1E 01	1.6E 03	1.3E 03	1.3E 03	2.1E-01	1.6E-03	1.3E-03	1.3E-03
Heptachlor Epoxide <sup>d</sup>	0	5.2E 01	3.8E 03	1.0E 03	1.1E 03	8.2E 01	6.4E 03	6.4E 03	7.0E 03	1.3E 01	9.5E 04	1.0E 04	1.1E 04	2.1E 01	1.6E 03	6.4E 04	7.0E 04	2.1E-01	1.6E-03	6.4E-04	7.0E-04
Hexachlorobenzene <sup>d</sup>	0			7.5E-03	7.7E 03			4.8E 02	4.9E-02							4.8E 03	4.9E 03			4.8E-03	4.9E-03
Hexachlorobutadiene <sup>d</sup>	0			4.4E+00	5.0E+02			2.8E+01	3.2E+03			4.4E 01	5.0E+01			2.8E+00	3.2E+02			2.8E+00	3.2E+02
Hexachlorocyclohexane	0			3.9E-02	1.3E 01			2.5E 01	8.3E 01			3.9E-03	1.3E 02			2.5E 02	8.3E 02			2.5E-02	8.3E 02
Alpha BHC <sup>c</sup>	0			1.4E-01	4.8E 01			8.9E 01	2.9E+03			1.4E 02	4.6E-02			8.9E 02	2.9E 01			8.9E-02	2.9E 01
Beta BHC <sup>c</sup>	0			1.9E-01	6.3E 01	1.5E+00		1.2E+00	4.0E+00	2.4E 01		1.9E 02	6.3E-02	3.7E 01		1.2E-01	4.0E-01	3.7E-01		1.2E-01	4.0E-01
Hexachlorocyclopentadiene	0			2.4E+02	1.7E+04			6.6E+02	4.8E+04			2.4E+01	1.7E+03			6.6E+01	4.8E+03			6.6E+01	4.8E+03
Hexachloroethane <sup>d</sup>	0			1.9E+01	8.9E+01			1.2E+02	5.7E+02			1.9E+00	8.9E+00			1.2E+01	5.7E+01			1.2E+01	5.7E+01
Hydrogen Sulfide	0		2.0E+00					3.4E+00				5.0E 01				8.5E 01				8.5E 01	
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0			4.4E-02	4.9E 01			2.8E-01	3.1E+00			4.4E 03	4.9E 02			2.8E 02	3.1E 01			2.8E-02	3.1E-01
Iron	0			3.0E+02				8.2E+02				3.0E+01				8.2E+01				8.2E+01	
Isophorone <sup>d</sup>	0			3.6E+02	2.6E+04			2.3E+03	1.7E+05			3.6E+01	2.6E+03			2.3E+02	1.7E+04			2.3E+02	1.7E+04
Kepones	0		0.0E+00					0.0E+00				0.0E+00				0.0E+00				0.0E+00	
Lead	0	2.6E+01	3.0E+00	1.5E+01		4.2E+01	5.0E+00	4.1E+01		6.6E+00	7.4E-01	1.5E+00		1.0E+01	1.3E+00	4.1E+00		1.0E+01	1.3E+00	4.1E+00	
Malathion	0		1.0E 01					1.7E 01				2.5E 02				4.2E 02				4.2E-02	
Manganese	0			5.0E+01				1.4E+02				5.0E+00				1.4E+01				1.4E+01	
Mercury	0	1.4E+00	7.7E-01	5.0E 02	5.1E-02	2.2E+00	1.3E+00	1.4E-01	1.4E 01	3.5E 01	1.9E 01	5.0E 03	5.1E 03	5.5E 01	3.3E 01	1.4E 02	1.4E 02	5.5E-01	3.3E-01	1.4E-02	1.4E-02
Methyl Bromide	0			4.8E+01	4.0E+03			1.3E+02	1.1E+04			4.8E+00	4.0E+02			1.3E+01	1.1E+03			1.3E+01	1.1E+03
Methoxychlor	0		3.0E 02	1.0E+02				5.1E 02	2.7E+02			7.5E 03	1.0E+01			1.3E 02	2.7E+01			1.3E-02	2.7E+01
Mirex	0		0.0E+00					0.0E+00				0.0E+00				0.0E+00				0.0E+00	
Monochlorobenzene	0			6.8E+02	2.1E+04			1.9E+03	5.7E+04			6.8E+01	2.1E+03			1.9E+02	5.7E+03			1.9E+02	5.7E+03
Nickel	0	6.7E+01	7.4E+00	6.1E+02	4.6E+03	1.1E+02	1.2E+01	1.7E+03	1.3E+04	1.7E+01	1.8E+00	5.1E+01	4.6E+02	2.6E+01	3.1E+00	1.7E+02	1.3E+03	2.6E+01	3.1E+00	1.7E+02	1.3E+03
Nitrate (as N)	0			1.0E+04				2.7E+04				1.0E+03				2.7E+03				2.7E+03	
Nitrobenzene	0			1.7E+01	1.9E+03			4.6E+01	5.2E+03			1.7E+00	1.9E+02			4.6E+00	5.2E+02			4.6E+00	5.2E+02
N Nitrosodimethylamine <sup>d</sup>	0			8.9E 03	8.1E+01			4.4E 02	5.2E+02			6.9E 04	8.1E+00			4.4E 03	5.2E+01			4.4E 03	5.2E+01
N Nitrosodiphenylamine <sup>d</sup>	0			5.0E+01	1.6E+02			3.2E+02	1.0E+03			5.0E+00	1.6E+01			3.2E+01	1.0E+02			3.2E+01	1.0E+02
N Nitrosodi n propylamine <sup>d</sup>	0			5.0E 02	1.4E+01			3.2E 01	8.9E+01			5.0E 03	1.4E+00			3.2E 02	8.9E+00			3.2E-02	8.9E+00
Parathion	0	6.5E 02	1.3E 02			1.0E 01	2.2E 02			1.6E 02	3.3E 03			2.6E 02	5.5E 03			2.6E-02	5.5E-03		
PCB 1016	0		1.4E 02					2.4E 02				3.5E 03				5.9E 03				5.9E-03	
PCB 1221	0		1.4E 02					2.4E 02				3.5E 03				5.9E 03				5.9E-03	
PCB 1232	0		1.4E 02					2.4E 02				3.5E-03				5.9E 03				5.9E-03	
PCB 1242	0		1.4E 02					2.4E 02				3.5E-03				5.9E 03				5.9E-03	
PCB 1248	0		1.4E 02					2.4E 02				3.5E 03				5.9E 03				5.9E-03	
PCB 1254	0		1.4E 02					2.4E 02				3.5E 03				5.9E 03				5.9E-03	
PCB 1260	0		1.4E 02					2.4E 02				3.5E 03				5.9E 03				5.9E-03	
PCB Total <sup>f</sup>	0			1.7E 03	1.7E 03			1.1E 02	1.1E 02			1.7E 04	1.7E 04			1.1E 03	1.1E 03			1.1E-03	1.1E 03

Parameter (ug/l unless noted)	Background Conc	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol <sup>c</sup>	0	9.9E+00	7.7E+00	2.8E+00	8.2E+01	1.6E+01	1.3E+01	1.9E+01	5.2E+02	2.5E+00	1.9E+00	2.8E 01	8.2E+00	3.9E+00	3.3E+00	1.8E+00	5.2E+01	3.9E+00	3.3E+00	1.8E+00	5.2E+01
Phenol	0			2.1E+04	4.6E+06			5.7E+04	1.3E+07			2.1E+03	4.6E+05			5.7E+03	1.3E+06			5.7E+03	1.3E+06
Pyrene	0			9.6E+02	1.1E+04			2.6E+03	3.0E+04			9.6E+01	1.1E+03			2.6E+02	3.0E+03			2.6E+02	3.0E+03
Radionuclides (pCi) except Beta/Photon	0																				
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0			1.5E+01	1.5E+01			4.1E+01	4.1E+01			1.5E+00	1.5E+00			4.1E+00	4.1E+00			4.1E+00	4.1E+00
Strontium 90	0			4.0E+00	4.0E+00			1.1E+01	1.1E+01			4.0E 01	4.0E 01			1.1E+00	1.1E+00			1.1E+00	1.1E+00
Tritium	0			8.0E+00	8.0E+00			2.2E+01	2.2E+01			8.0E 01	8.0E 01			2.2E+00	2.2E+00			2.2E+00	2.2E+00
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	3.2E+01	8.5E+00	4.6E+02	3.0E+04	5.0E+00	1.3E+00	1.7E+01	1.1E+03	7.9E+00	2.1E+00	4.6E+01	3.0E+03	7.9E+00	2.1E+00	4.6E+01	3.0E+03
Sulfate	0	4.5E 01		2.5E+05		7.1E 01		6.8E+05				2.5E+04		1.8E 01		6.8E+04				1.8E 01	
1,2,4 Trichloroethane <sup>f</sup>	0			1.7E+00	1.1E+02			1.1E+01	7.0E+02			1.7E-01	1.1E+01			1.1E+00	7.0E+01			1.1E+00	7.0E+01
Tetrachloroethane <sup>f</sup>	0			8.0E+00	8.9E+01			5.1E+01	5.7E+02			8.0E-01	8.9E+00			5.1E+00	5.7E+01			5.1E+00	5.7E+01
Thallium	0			1.7E+00	6.3E+00			4.6E+00	1.7E+01			1.7E 01	6.3E 01			4.6E 01	1.7E+00			4.6E-01	1.7E+00
Toluene	0			6.8E+03	2.0E+05			1.9E+04	5.5E+05			6.8E+02	2.0E+04			1.9E+03	5.5E+04			1.9E+03	5.5E+04
Total dissolved solids	0			5.0E+05				1.4E+06				5.0E+04				1.4E+05				1.4E+05	
Toxaphene <sup>c</sup>	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	1.2E+00	3.4E 04	4.7E 02	4.8E 02	1.8E 01	5.0E 05	7.3E-04	7.5E 04	2.9E-01	8.5E-05	4.7E 03	4.8E 03	2.9E-01	8.5E-05	4.7E-03	4.8E 03
Tributyltin	0	4.6E 01	6.3E 02			7.3E 01	1.1E-01			1.2E 01	1.6E 02			1.8E-01	2.7E 02			1.8E-01	2.7E-02		
1,2,4 Trichlorobenzene	0			2.6E+02	9.4E+02			7.1E+02	2.6E+03			2.6E+01	9.4E+01			7.1E+01	2.6E+02			7.1E+01	2.6E+02
1,1,2 Trichloroethane <sup>f</sup>	0			6.0E+00	4.2E+02			3.8E+01	2.7E+03			6.0E 01	4.2E+01			3.8E+00	2.7E+02			3.8E+00	2.7E+02
Trichloroethylene <sup>c</sup>	0			2.7E+01	8.1E+02			1.7E+02	5.2E+03			2.7E+00	8.1E+01			1.7E+01	5.2E+02			1.7E+01	5.2E+02
2,4,6 Trichlorophenol <sup>c</sup>	0			2.1E+01	6.5E+01			1.3E+02	4.2E+02			2.1E+00	6.5E+00			1.3E+01	4.2E+01			1.3E+01	4.2E+01
2 (2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0			5.0E+01				1.4E+02				5.0E+00				1.4E+01				1.4E+01	
Vinyl Chloride <sup>f</sup>	0			2.3E 01	6.1E+01			1.5E+00	3.9E+02			2.3E 02	6.1E+00			1.5E 01	3.9E+01			1.5E-01	3.9E+01
Zinc	0	4.3E+01	4.3E+01	9.1E+03	6.9E+04	6.8E+01	7.3E+01	2.5E+04	1.9E+05	1.1E+01	1.1E+01	9.1E+02	6.9E+03	1.7E+01	1.8E+01	2.5E+03	1.9E+04	1.7E+01	1.8E+01	2.5E+03	1.9E+04

# Notes

- All concentrations expressed as micrograms/liter (ug/l) unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipalities
- Metals measured as Dissolved unless specified otherwise
- C indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information  
Antidegradation WLAs are based upon a complete mix  
Antidegradation Baseline = (0.25(WQC background conc) + background conc) for acute and chronic  
= (0.1(WQC background conc) + background conc) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic, 30Q5 for Non carcinogens  
Harmonic Mean for Carcinogens and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate

Metal	Target Value (SSTV)
Antimony	3.6E+00
Arsenic	2.7E+00
Barium	5.5E+02
Cadmium	1.1E 01
Chromium III	7.1E+00
Chromium VI	2.5E+00
Copper	7.0E 01
Iron	8.2E+01
Lead	7.5E 01
Manganese	1.4E+01
Mercury	1.4E 02
Nickel	1.9E+00
Selenium	1.3E+00
Silver	7.1E 02
Zinc	8.8E+00

Note: do not use QLs lower than the minimum QLs provided in agency guidance

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Spreadsheet for determination of WET test endpoints or WET limits													
2														
3														
4	Excel 97			Acute Endpoint/Permit Limit				Use as LC <sub>50</sub> in Special Condition as TUa on DMR						
5	Revision Date 01/10/05													
6	File WETLIM10.xls			ACUTE 100% =		NOAEC		LC <sub>50</sub> = NA		% Use as		NA TUa		
7	(MIX EXE required also)			ACUTE WLAa		0 47307692		Note Inform the permittee that if the mean of the data exceeds this TUa 1 0 a limit may result using WLA EXE						
8														
9														
10				Chronic Endpoint/Permit Limit				Use as NOEC in Special Condition as TUC on DMR						
11														
12				CHRONIC 2 475126388		TUC		NOEC =		41 % Use as		2 43 TU		
13				BOTH 4 730769347		TUC		NOEC =		22 % Use as		4 54 TUC		
14				AML 2 475126388		TU		NOEC =		41 % Use as		2 43 TUC		
15	Enter data in the cells with blue type													
16														
17	Entry Date		10/13/09		ACUTE WLAa c		4 73076923		Note Inform the permittee that if the mean					
18	Facility Name		Gunnose Sausage		CHRONIC WLAc		1 69230769		of the data exceeds this TUC 1 01714					
19	VPDES Number		VA0001449		Both means acute expressed as chronic									
20	Outfall Number		1											
21					% Flow to be used from MIX EXE				Diffuser /modeling study?					
22	Plant Flow		0 026 MGD						Enter Y/N n					
23	Acute 1Q10		0 015 MGD		100 %				Acute 1 1					
24	Chronic 7Q10		0 018 MGD		100 %				Chronic 1 1					
25														
26	Are data available to calculate CV? (Y/N)				N		(Minimum of 10 data points same species needed)				Go to Page 2			
27	Are data available to calculate ACR? (Y/N)				N		(NOEC<LC50 do not use greater/less than data)				Go to Page 3			
28														
29														
30	IWC <sub>a</sub>		63 41463415 %		Plant flow/plant flow + 1Q10		NOTE If the IWC <sub>a</sub> is >33% specify the							
31	IWC <sub>c</sub>		59 09090909 %		Plant flow/plant flow + 7Q10		NOAEC = 100% test/endpoint for use							
32														
33	Dilution acute		1 576923077		100/IWC <sub>a</sub>									
34	Dilution chronic		1 692307692		100/IWC <sub>c</sub>									
35														
36	WLA		0 473076923		Instream criterion (0 3 TUa) X s Dilution acute									
37	WLA <sub>c</sub>		1 692307692		Instream criterion (1 0 TUC) X s Dilution chronic									
38	WLA <sub>a,c</sub>		4 730769231		ACR X s WLA <sub>a</sub> converts acute WLA to chronic units									
39														
40	ACR acute/chronic ratio		10		LC50/NOEC (Default is 10 if data are available use tables Page 3)									
41	CV Coefficient of variation		0 6		Default of 0 6 if data are available use tables Page 2)									
42	Constants eA		0 4109447		Default = 0 41									
43	eB		0 6010373		Default = 0 60									
44	eC		2 4334175		Default = 2 43									
45	eD		2 4334175		Default = 2 43 (1 samp)		No of sample		1		**The Maximum Daily Limit is calculated from the lowest			
46	LTA X s eC The LTA <sub>a,c</sub> and MDL using it are driven by the ACR													
47	LTA		1 944084542		WLAa c X s eA									
48	LTA <sub>c</sub>		1 017140046		WLAc X s eB		Rounded NOEC s %							
49	MDL with LTA		4 730769347		TUC		NOEC =		21 138211		(Protects from acute/chronic toxicity) NOEC = 22 %			
50	MDL with LTA <sub>c</sub>		2 475126388		TUC		NOEC =		40 401977		(Protects from chronic toxicity) NOEC = 41 %			
51	AML with lowest LTA		2 475126388		TUC		NOEC =		40 401977		Lowest LTA X s eD NOEC = 41 %			
52														
53	IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED CONVERT MDL FROM TUC to TUA													
54														
55	MDL with LTA <sub>a,c</sub>		0 473076935		TUA		LC50 =		211 382109 %		Use NOAEC=100% LC50 = NA %			
56	MDL with LTA <sub>c</sub>		0 247512639		TUA		LC50 =		404 019772 %		Use NOAEC=100% LC50 = NA %			
57														

[illegible]

10/9/2009 11 06 53 AM

Facility = Gunnoe Sausage  
Chemical = Ammonia  
Chronic averaging period = 30  
WLAa = 10  
WLAc = 1.8  
Q L = 0.02  
# samples/mo = 4  
# samples/wk = 1

Summary of Statistics

# observations = 1  
Expected Value = 18  
Variance = 0.11664  
C V = 0.6  
97th percentile daily values = 438015  
97th percentile 4 day average = 299482  
97th percentile 30 day average = 217089  
# < Q L = 0  
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are

0.18

10/9/2009 11 03 37 AM

Facility = Gunnoe Sausage  
Chemical = Dissolved Copper  
Chronic averaging period = 4  
WLAa = 35  
WLAc = 88  
Q L = 0 2  
# samples/mo = 1  
# samples/wk = 1

Summary of Statistics

# observations = 1  
Expected Value = 3  
Variance = 0324  
C V = 0 6  
97th percentile daily values = 730025  
97th percentile 4 day average = 499137  
97th percentile 30 day average= 361815  
# < Q L = 0  
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are

0 3

10/9/2009 11 01 15 AM

Facility = Gunnoe Sausage  
Chemical = Dissolved Zinc  
Chronic averaging period = 4  
WLAa = 74  
WLAc = 80  
Q L = 20  
# samples/mo = 1  
# samples/wk = 1

#### Summary of Statistics

# observations = 1  
Expected Value = 30  
Variance = 324  
C V = 0.6  
97th percentile daily values = 73.0025  
97th percentile 4 day average = 49.9137  
97th percentile 30 day average = 36.1815  
# < Q L = 0  
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are

**APPENDIX D**  
TMDL Excerpts

### Addendum to the Big Otter River Basin Fecal Coliform TMDLs (January 2001)

EPA's comments, as provided in their letter reviewing the fecal coliform TMDLs for five impaired segments in the Big Otter River basin, are re-stated in italics and followed by the particular response for each comment

*EPA Section 5.2.1 States that there are two point sources (Gunnose Sausage Company and Otter River Elementary School) in the Elk Creek watershed. However section 5.3.2 states that there is only one permitted point source. It is mentioned that neither of these facilities discharge to the impaired segment of Elk Creek. How many point sources are there within the Elk Creek watershed? How was then load allocated to the Big Otter? For the allocation were the point sources modeled as discharging at their permitted concentration?*

**Response** There are two point sources for fecal coliform in the Elk Creek watershed: Gunnose Sausage Company (VA0001449) and Otter River Elementary School (VA0020851). Neither of these contributed fecal coliform to the impaired segment on Elk Creek. Only the Gunnose Sausage Company (VA0001449) was used in the simulations as a contributor to the impairment of the Lower Big Otter River. The Otter River Elementary School (VA0020851) was not used in the simulations for the Lower Big Otter River impairment because the design flow for this source was 0.0696 cfs, which was considered insignificant. The Gunnose Sausage Company point source (VA0001449) was modeled as discharging fecal coliform at the permitted concentration for the allocation. Table 1 summarizes the flow and load information for Elk Creek. The point source load from Elk Creek was incorporated into the Lower Big Otter TMDL simulations as an upstream inflow. As modeled, the outflow from Elk Creek flows into Buffalo Creek, and the Buffalo Creek outflow is an inflow into the Lower Big Otter River.

Table 1 The hourly and annual loads from the point sources in the Elk Creek watershed

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load <sup>1</sup> (cfu/yr)
VA0001449 <sup>1</sup>	0.6907	122,500,000	$1.07 \times 10^{12}$
VA0020851 <sup>2</sup>	0.0696	14,200,000	$1.24 \times 10^{11}$
Total			$1.19 \times 10^{12}$

<sup>1</sup> Annual load is hourly load times 8,760 hr/yr

<sup>2</sup> Does not contribute to impaired segment in Elk Creek HUP

*EPA Section 7.2.1 States that there are four permitted point sources in the Little Otter River watershed. However in Section 7.3.2 it mentions that there are five permitted point sources, two of which were modeled for. Please verify the number of permitted point sources within this watershed. Was the Waste Load Allocation (WLA) set at a value that incorporates the permitted discharge of all of the permitted point sources? How was the loading from the facilities not modeled incorporated into the WLA and how was it determined that this additional loading would not affect the model? 1 WLA for each point source should be provided as an addendum to the report. A modeling run showing the effects of the non-modeled point sources should be provided with the addendum.*

**Response** Section 7.3.2 is in error and should state there are four permitted point sources in the Little Otter River watershed. Section 7.2.1 is correct in regards to the number of permitted point sources in the Little Otter River watershed. However, only three of these point sources have limits for fecal coliform or the alternate disinfection clause in their permit and thus need WLAs for fecal coliform. Table 2 shows the point sources listed in table 7.5 of the TMDL document and the modified list for this addendum.

**Table 2 List of permitted point sources in the Little Otter River watershed (L26b)**

Name of Point Source		VPDES Permit No	Comment
<u>TMDL report</u>			
Thaxton Elementary School	Table 7.5	VA0020869	Listed but not modeled
Liberty High School	Table 7.5	VA0020796	Listed but not modeled
Dillons Trailer Park	Table 7.5	VA0087840	Listed but not modeled
City of Bedford SFP	Table 7.5	VA0022390	Listed and modeled
City of Bedford WTP	Addendum	VA0001503	Modeled but not listed
<u>Addendum</u>			
Thaxton Elementary School		VA0020869	Not included (no discharge to L26b)
Liberty High School		VA0020796	Included
Dillons Trailer Park		VA0087840	Included
City of Bedford SFP		VA0022390	Included
City of Bedford WTP		VA0001503	Not included (no permit limit)

A comparison of annual loads using only those point sources given a WLA in the TMDL and using all point sources with a fecal coliform permit component is shown in table 3. While VA0001503 was given a WLA in the TMDL, that facility's permit is for flow, pH and TSS only making a fecal coliform WLA unnecessary. The WLAs were calculated and modeled as if all the point sources were discharging fecal coliform at the permitted concentrations. As table 3 illustrates, there is no difference in the sum of wasteload allocations between the original point source simulation used in the TMDL and the simulation using all point sources with a fecal coliform permit component.

**Table 3 The hourly and annual loads from the point sources in the Little Otter River watershed**

PS Discharge TMDL	Flow (cfs)	Load (cfu/hr)	Annual Load <sup>1</sup> (cfu/yr)
VA0001503	0.0680	13,900,000	$1.22 \times 10^{11}$
VA0022390	3.0950	631,000,000	$5.53 \times 10^{12}$
<b>Total</b>			$5.65 \times 10^{12}$
PS Discharge Addendum			
VA0001503	0.0680	N/A <sup>2</sup>	N/A
VA0022390	3.0950	631,000,000	$5.53 \times 10^{12}$
VA0020796	0.0378	7,800,000	$6.83 \times 10^{10}$
VA0087840	0.0279	5,700,000	$4.99 \times 10^{10}$
<b>Total</b>			$5.65 \times 10^{12}$

<sup>1</sup> Annual load is hourly load times 8,760 hr/yr

<sup>2</sup> Permit is for flow, pH and TSS only (filter backwash at WTP)

Supporting this assessment is a modeling run using 200 cfu/100mL at design flow for all five point sources originally considered in the TMDL. Figure 1 shows a plot of the difference between the two modeling runs, indicating that the difference in terms of concentrations never exceeds 0.9 counts/100 mL. This increase did not result in any violations of the 30-day geometric mean standard with a 5% margin of safety, i.e. 190 cfu/100mL. Therefore, the Little Otter River TMDL accurately represents the point sources along this segment.

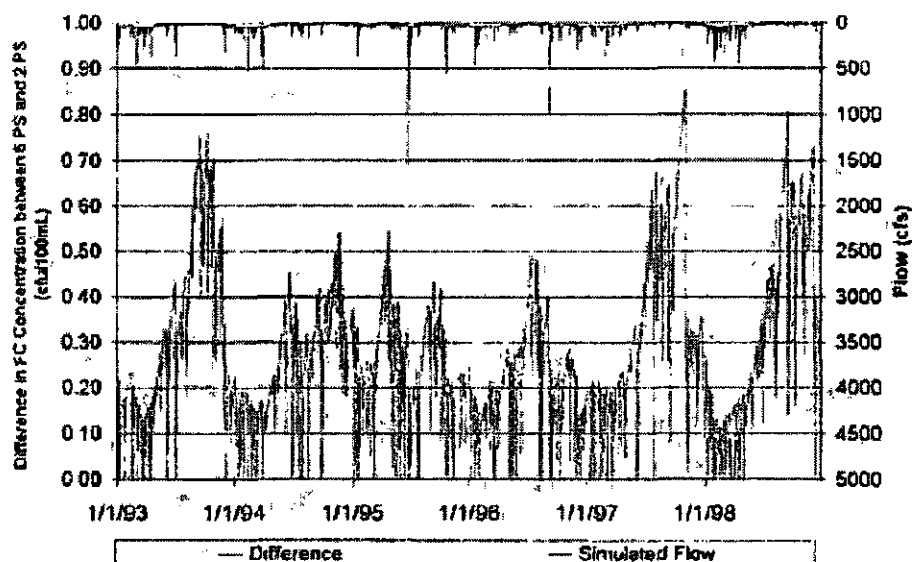


Figure 1. Difference in fecal coliform concentration for the modeling run with five point sources and the modeling run with only the original two point sources used in the simulations.

To reflect the above analysis, tables 1-17 and 7-22 need to be replaced with the following table 4. The WLA should read  $5.65 \times 10^{12}$  and not  $6.8 \times 10^{12}$ . It appears that in adding the original point source loads, the exponent for VA0001503 was misread as 12 instead of 11.

Table 4. Annual fecal coliform loadings (cfu/year) used for developing the fecal coliform TMDL for the Little Otter River watershed (L26b).

Subwatershed	EWLA	ELA <sup>a</sup>	MOS <sup>b</sup>	TMDL
Little Otter River	$5.65 \times 10^{12}$	$1.3777 \times 10^{12}$	$72.8 \times 10^{11}$	$1.45615 \times 10^{12}$

<sup>a</sup> with 1.4 from Machine Creek inflow of  $849.4 \times 10^{12}$  cfu/year

<sup>b</sup> Five percent of TMDL

Tables 5-8 show summaries of flow and loading information for permitted dischargers along the Machine Creek, Buffalo Creek, Flat Creek and the Lower Big Otter River impaired segments

**Table 5 The hourly and annual loads from the point sources in the Machine Creek watershed**

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load <sup>1</sup> (cfu/yr)
VA0020818	0.0696	14,200,000	$1.24 \times 10^{11}$
<b>Total</b>			$1.24 \times 10^{11}$

<sup>1</sup> Annual load is hourly load times 8,760 hr/yr

**Table 6 The hourly and annual loads from the point sources in the Buffalo Creek watershed.**

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load <sup>1</sup> (cfu/yr)
VA0020826	0.0062	1,270,000	$1.11 \times 10^{10}$
VA0078999	0.6173	126,000,000	$1.10 \times 10^{12}$
VA0089311	0.0124	N/A <sup>2</sup>	N/A
<b>Total</b>			$1.11 \times 10^{12}$

<sup>1</sup> Annual load is hourly load times 8,760 hr/yr

<sup>2</sup> Permitted to discharge pool water (pH, solids)

**Table 7 The hourly and annual loads from the point sources in the Flat Creek watershed**

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load <sup>1</sup> (cfu/yr)
VA0031194	0.3713	75,800,000	$6.64 \times 10^{11}$
VA0050628	3.2492	N/A <sup>2</sup>	N/A
<b>Total</b>			$6.64 \times 10^{11}$

<sup>1</sup> Annual load is hourly load times 8,760 hr/yr

<sup>2</sup> Permitted to discharge quarry dewatering (pH, solids) only

**Table 8 The hourly and annual loads from the point sources in the Lower Big Otter watershed**

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load (cfu/yr)
VA0078646	0.04641	N/A <sup>1</sup>	N/A <sup>2</sup>
<b>Total</b>			N/A

<sup>1</sup> Permit is for flow, pH and TSS only (filter backwash at WTP)

All waste load allocations (WLAs) were calculated based on each point source discharging fecal coliform at permitted limits. Future changes in the permit may require a re-examination of the TMDLs to see if there are any impacts on water quality.